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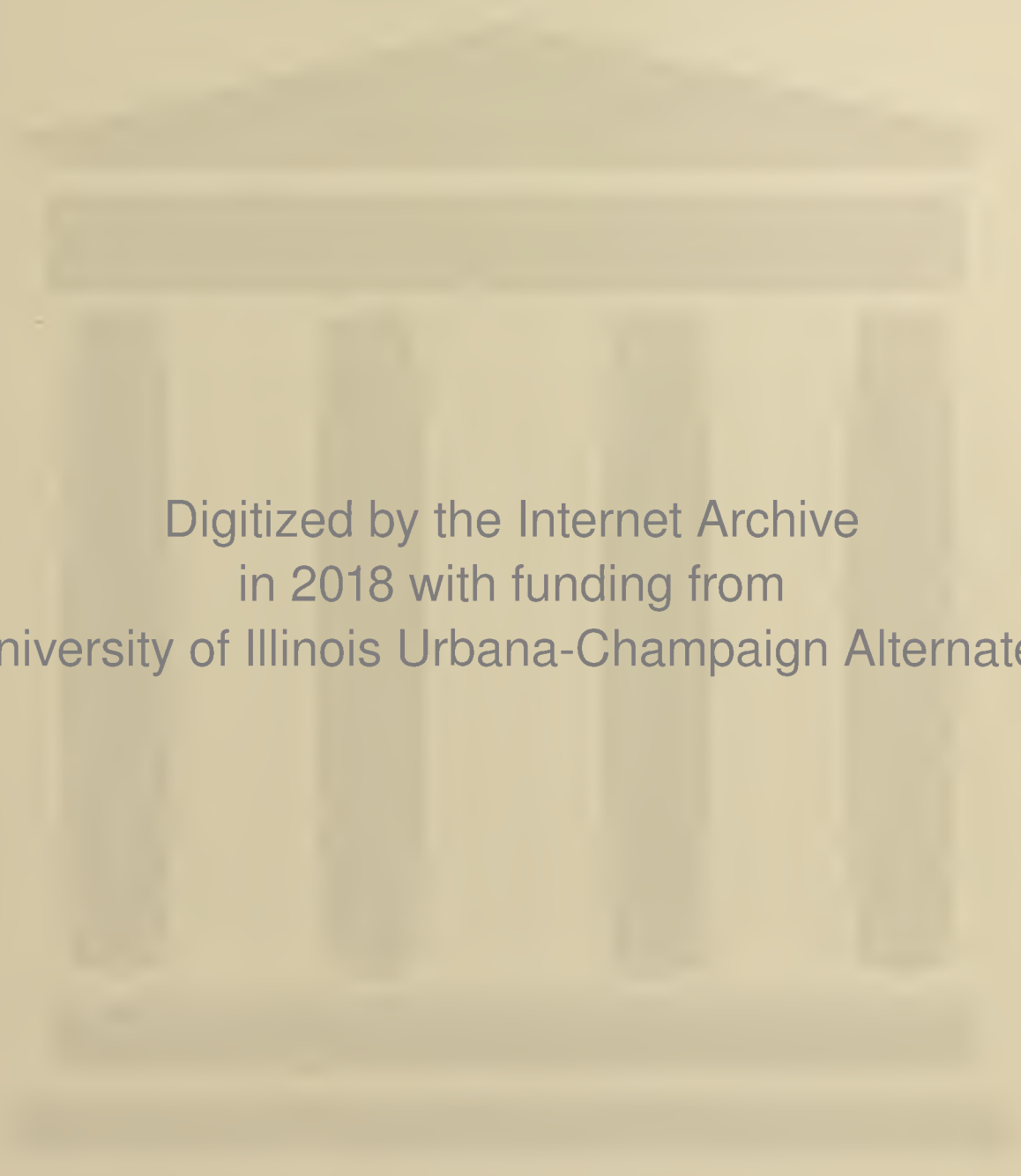
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The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI.
 NUMBER 14.

NEW YORK AND CHICAGO, OCTOBER 5, 1901.

ONE DOLLAR A YEAR.
 SINGLE COPIES 5 CENTS.

WILLIAM M. NEWTON,

Albany, N. Y.

Fire Brick Stove Linings

HIGH GRADE. LOW PRICE.

Also **Plastic Iron Stone Stove Lining**

In Bags or Barrels. Send for Prices.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK.
 77 Oliver St., BOSTON.

Old Colony Bldg., CHICAGO.
 Prudential Bldg., ATLANTA, GA.



STOVE LININGS

MCLEOD & HENRY CO.,

TROY, N. Y.

Diamond Thimbles. **S. CHENEY & SON,**
 Manlius, N. Y.

Paragon Point No. 5.—ABSOLUTELY SELF CLEANING.

Both the inner and outer combustion chambers of the Paragon Furnace are self cleaning. That is, the upper and lower radiators are constructed in such a way that there really is no place for the soot to collect. The soot can do nothing else but fall back into the fire pot.

This point means that you do not have to pay a man every spring to clean the flues of the Paragon Furnace—and that the furnace is continually clean, and, therefore, in condition to do its best work.

ISAAC A. SHEPPARD & CO.

NEW YORK

PHILADELPHIA

BALTIMORE

**APOLLO BEST BLOOM
 GALVANIZED IRON**

A galvanized iron job—any job—is easiest done with perfect iron; difficult work especially.

Time is money, and doubt is money, too.

You can always get what you want of Apollo promptly.

Is there any good reason for using poor iron?

American Sheet Steel Company
 Battery Park Building
 New York

WHAT MAKES

The Stewart Oak

So popular among the dealers? Because it is a lively seller and brings good profit. It stays sold and nobody kicks at it except the coal man.

FULLER & WARREN CO., Troy, N. Y.

" KITCHEN BOILER CONNECTIONS " **PRINCIPLES OF PIPING BOILERS** **FIFTH EDITION**
 —EXPLAINS THE— Price, \$1.00
 David Williams Co.,
 232 William Street, N. Y.



CROSBY SPRING-SEAT

GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gate & Valve Co.,
 BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.



Jenkins Bros.' Valves

are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the **BEST** ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.

JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

FOLLANSBEE BROTHERS CO.,
 328-330-332 Second Ave.,
 Galvanized and Black Sheets.

The best made
 Sheet Copper
 and Copper Bottoms
 at lowest mill price.
 Manufacturers
 Roofing Tin Plates.

Philadelphia Branch,
 133 Arch Street,
 S. V. Reeves, Manager.

Steam Specialties.

RELIEF and NOISELESS BACK
 ELEVATOR VALVES, PRESSURE VALVES,
 STEAM TRAPS, PUMP GOVERNORS,
 STEAM AND WATER SEPARATORS, STEAM and OIL SEP.
 REDUCING VALVES, ARATORS,
 TANK TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS
KIELEY AND MUELLER,
 9-17 W. 13th St., - NEW YORK.

READ OUR "AD"

Page 9.

MAGEE FURNACE CO.,

Boston.

ROUND OAK- STANDARD of AMERICA

CURTIS GANDY CHICAGO 1900

It takes very little work to sell a furnace of quality to the man who is throwing out a cheap furnace.

It would not have taken much more effort to have sold him the good one on the start. Trouble is—PRICE cuts entirely too much figure in the usual selling argument. It should be QUALITY.



Estate of P. D. Beckwith,
Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY.

Experts Say That the Old Fashioned Testimonial

Advertising is the Most Effective.

You Can Get Testimonials A-Plenty if You Sell the CARTON "B."

CARTON "B"

WARM AIR FURNACE.



FOR SOFT COAL

*A Furnace With an Established Reputation
For Thorough Efficiency.*

Strong in Every Detail.

Made to Endure.

International Heater Co.,

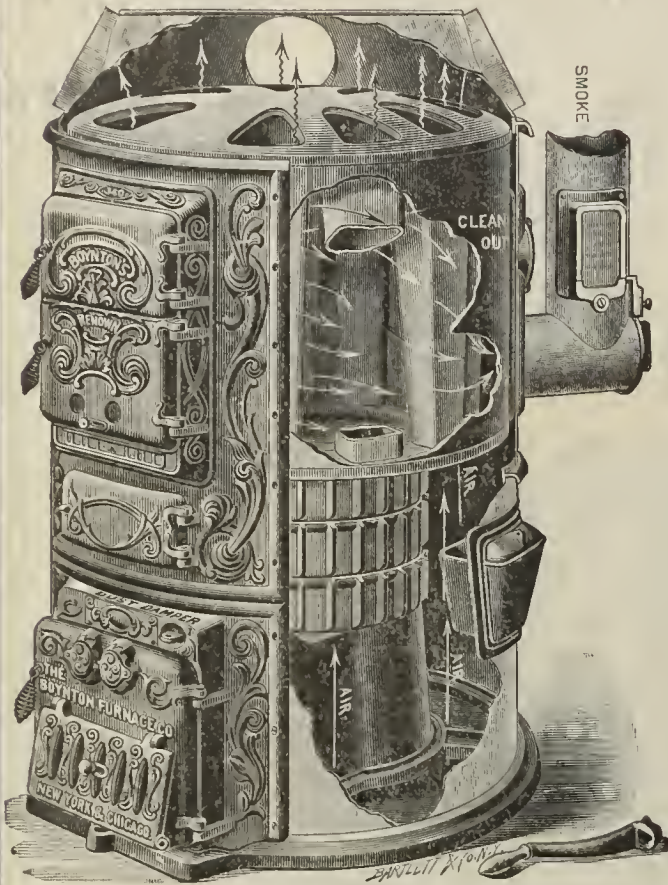
UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

LARGEST MAKERS OF HEATERS IN THE WORLD.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK,

CHICAGO.

The Monitor Base Burner

High Art Series.

Positively the most powerful Heater made.

Most novel in construction.

Embodying more salable features than any other.

Possessing greater heating circulation than any other.

A thoroughly up-to-date heater.

Send for complete description.

Secure the agency at once.

**The WM. RESOR
& CO.,**

**CINCINNATI,
U. S. A.**





Moore's ^{Air-Tight} Heater



Home, Sweet Home.

There is no place like home, and there's no home so comfortable as that which is furnished with a **MOORE'S AIR-TIGHT HEATER.**

This remarkable stove has now been before the American people for ten years, and has made a record for efficiency and economy which is unexcelled.

Joliet Stove Works

JOLIET, ILLINOIS.

The Portsmouth Stove & Range Co., Portsmouth, O.

MORLEY BROS., Saginaw, Michigan, Agents for Northwest.



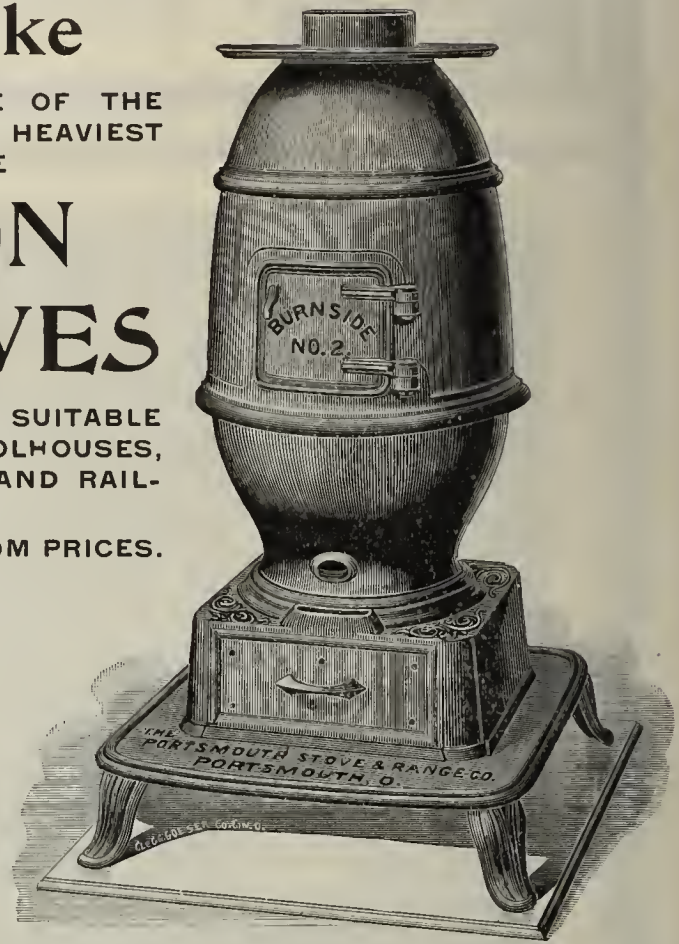
We Make

THE LARGEST LINE OF THE BEST, SMOOTHEST, HEAVIEST AND MOST RELIABLE

CANNON STOVES

ON THE MARKET. SUITABLE FOR OFFICES, SCHOOLHOUSES, STORES, CHURCHES AND RAILROAD SHOPS.

WRITE US FOR BOTTOM PRICES.



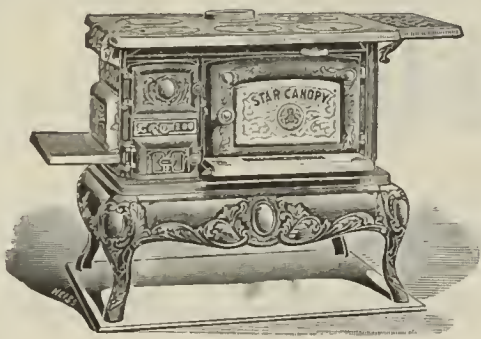
CANOPY RANGES LEAD ALL OTHERS

and are

POPULAR EVERYWHERE

A complete and distinct line of ranges

NEW and UNIQUE



POSITIVELY

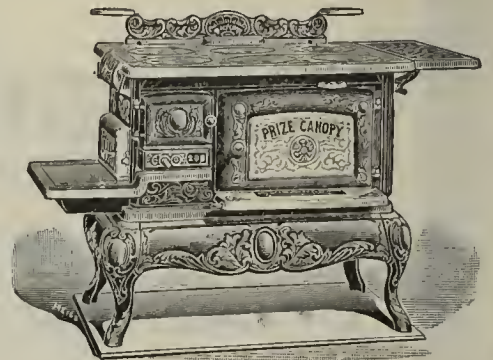
The Best Ranges for the Least Money.

WARRANTED

Of the Best Material and Workmanship.

WARRANTED

To Give Satisfaction in Operating.



FIRE BOX FIXTURES

STRONG AND DURABLE.

THE STAR, SUN and PRIZE CANOPY RANGES

Furnished with or without TEA SHELF, HIGH SHELF, RESERVOIR, WATER FRONT, OVEN THERMOMETER, NICKED STEEL EDGE FOR TOP OF RANGE OR HIGH SHELF.

SEND FOR CATALOGUE AND FULL PARTICULARS.

BUCKWALTER STOVE CO., = Box 10, = Royersford, Pa.



CINDERELLA

STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.

We would be pleased to send our catalogue.



PITTSBURGH STOVE & RANGE CO.,

PITTSBURGH, PA.

WESTERN SALES AGENT,

W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.



The American

M & D

Steel Range.

Best on Earth.

Made in four sizes : 16, 18, 20 and
22 inch ovens.

PORTABLE RESERVOIR,

White Enameled inside and out.
Ovens Iron Framed. *Back Flue
made of Heavy Cast Iron.* Oven
doors *correctly poised.* The *hand-
somest* and *best working Range*
ever produced. We make *Hotel*
and *Double Oven Ranges, Combi-
nation Ranges, Gas Ranges, Charcoal*
Broilers and *Laundry Stoves.*

M & D RANGE COMPANY, 96, 98, 100 Lake Street, Chicago.



CATALOGUES SHOWING
GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS

Should secure our Line of Goods. They will then have the Best on the Market.

The **Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges** are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

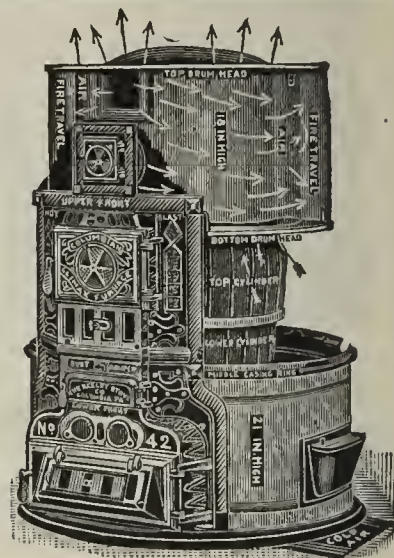
Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.

COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



Artistic
Enameled

Steel
Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse *Artistic Enameled Steel Ranges* with the ordinary black baked Japan used on other ranges.

The "ARTISTIC" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical; the best steel range.

SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

**GAS STOVES
& BURNERS**

**HADLER
CO.
PITTSBURGH
PA.**



**WRITE FOR
CATALOGUE
NO 34**

**THE MOST
COMPLETE LINE
FOR ALL GASES**

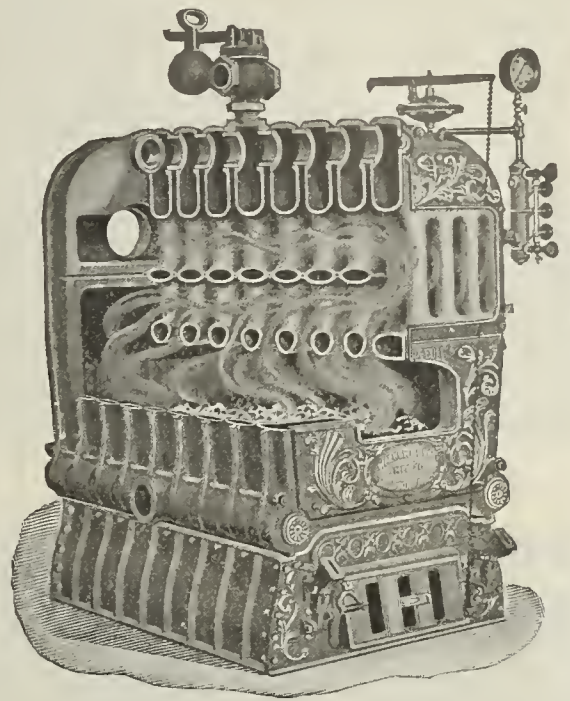
WALKER BOILERS

FOR WATER OR STEAM.

The most powerful, economical and compact boilers made. They have given perfect satisfaction wherever installed.

The fireboxes are deep, and keep fire well. The grates are triangular, with rocking grates in the larger sizes if preferred. The flues are well arranged, and are easily reached for cleaning. The sections are united by push nipples.

We will gladly send catalogue, and solicit correspondence.



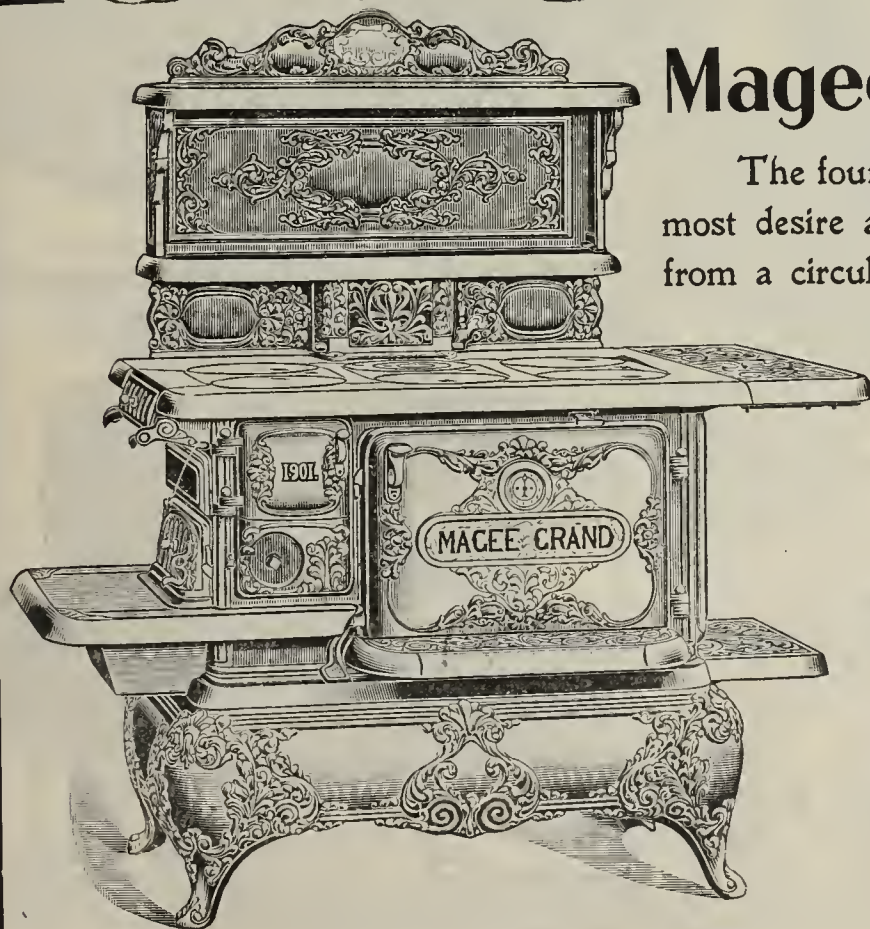
Walker & Pratt Mfg. Co.,

31-35 Union Street, BOSTON, MASS.

THE FINEST FACTORY IN THIS LINE IN THE WORLD.

the best cooking range.

You have heard of the Magee for years. If you are old enough you have heard of it for half a century. In all that time you have heard it praised for its large cooking capacity, for its small fuel consumption, for being so easily controlled, for being readily kept "bright and shining as the stars."



Magee Selling Points

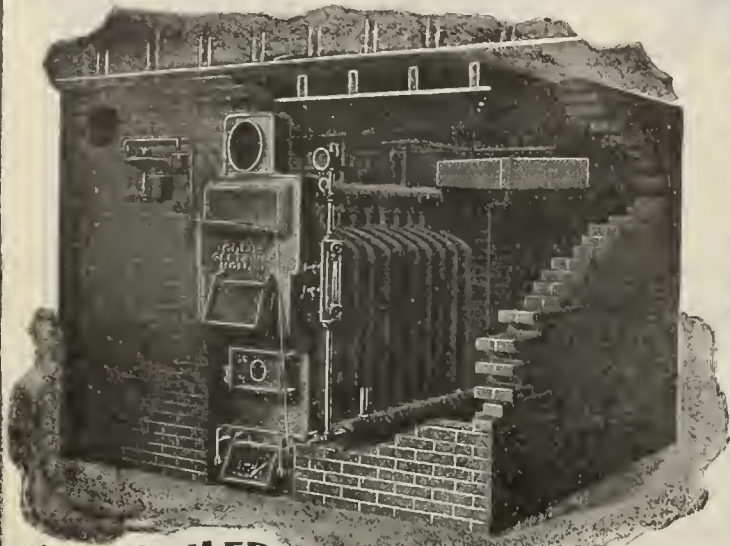
The four things about a range that housewives most desire are those mentioned in above clipping from a circular that has been placed in the hands of many thousand housewives.

If Magee Ranges excel in these points—and there's overwhelming evidence that they do—shouldn't they be the most profitable line for you to handle? Do you require more convincing evidence than you now have? Write:

Magee Furnace Company,

32-38 Union St., BOSTON, MASS.

Makers of Magee Heaters. Steam.
Hot Water. Warm Air and Combination.



GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300

THE H.B. SMITH CO.

**WESTFIELD,
MASS.**

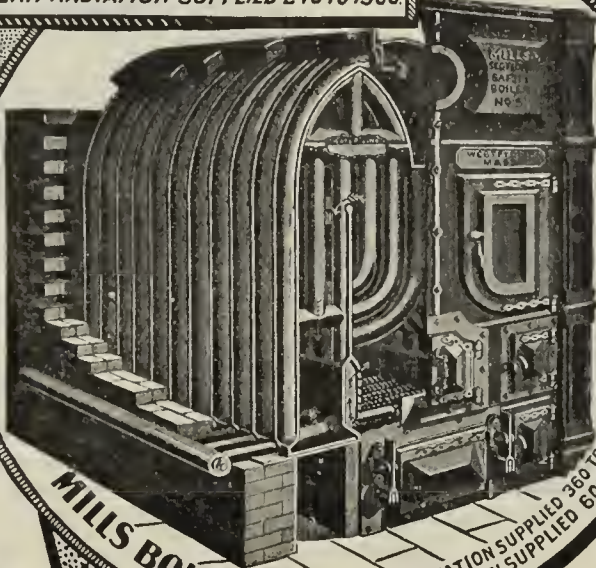
**EUROPEAN
AGENT,
AUG. EGGERS**

**BREMEN AND
NEW YORK
CITY.**



COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.

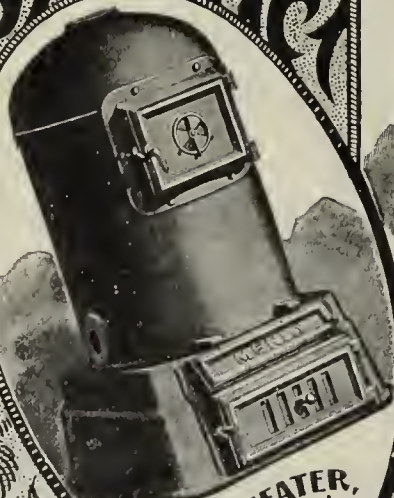
**PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.**



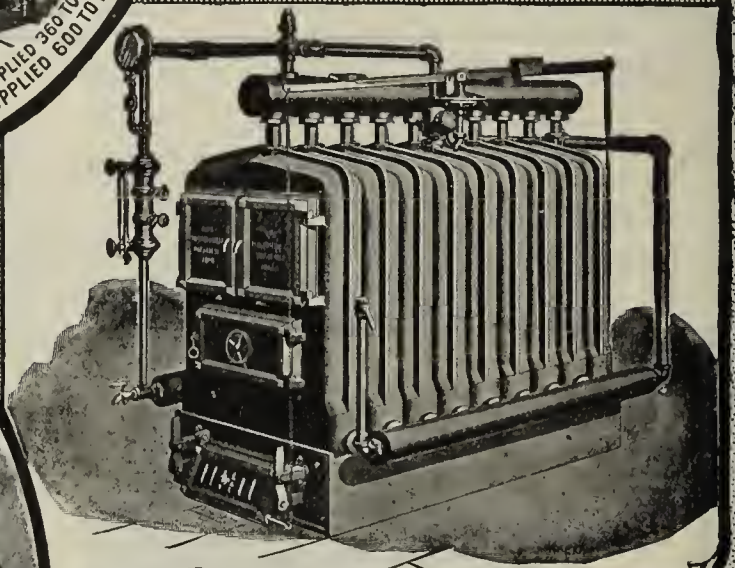
MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENIO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

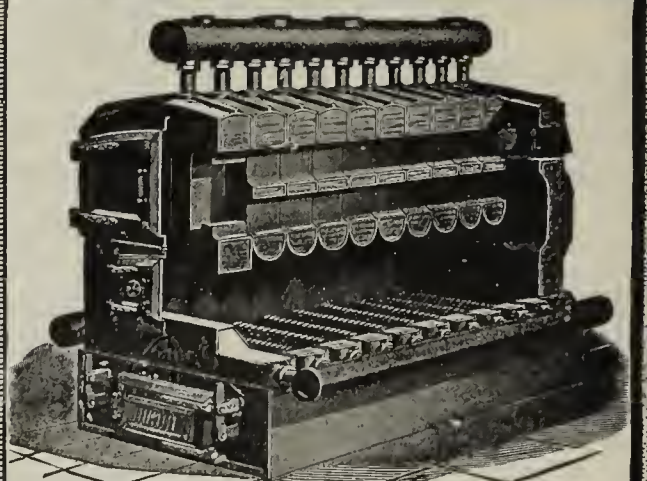
Western Agents

WESTERN BRASS M'FG CO.

ST. LOUIS, MO.

SALESROOMS:

**133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.**



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

JEWEL STOVES AND RANGES..



A Complete, Well Advertised Line,
Low Prices and Good Workmanship.

Please Write for Catalogue.

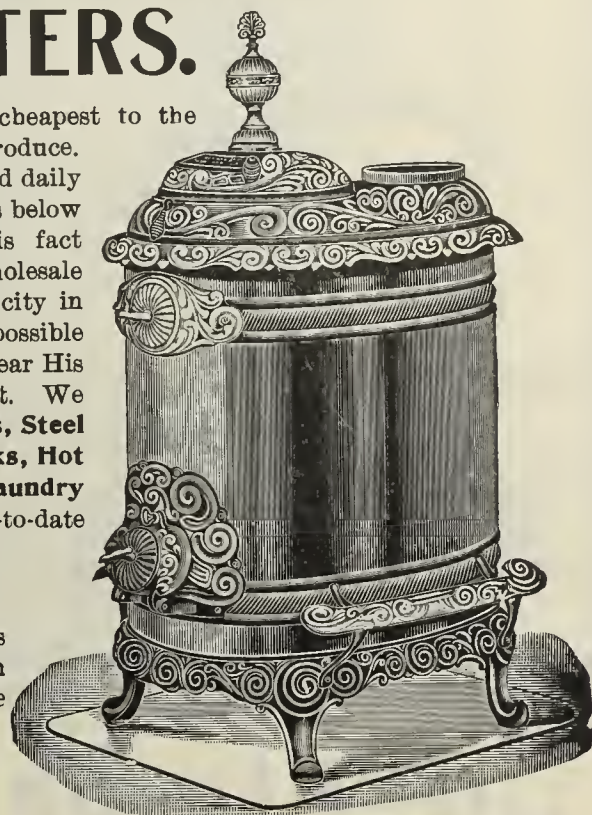
DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.



COOK STOVES,
OAK STOVES,
HEATING STOVES,
Air Tight Wood Stoves.
FIRE PLACE HEATERS,
FURNACES.

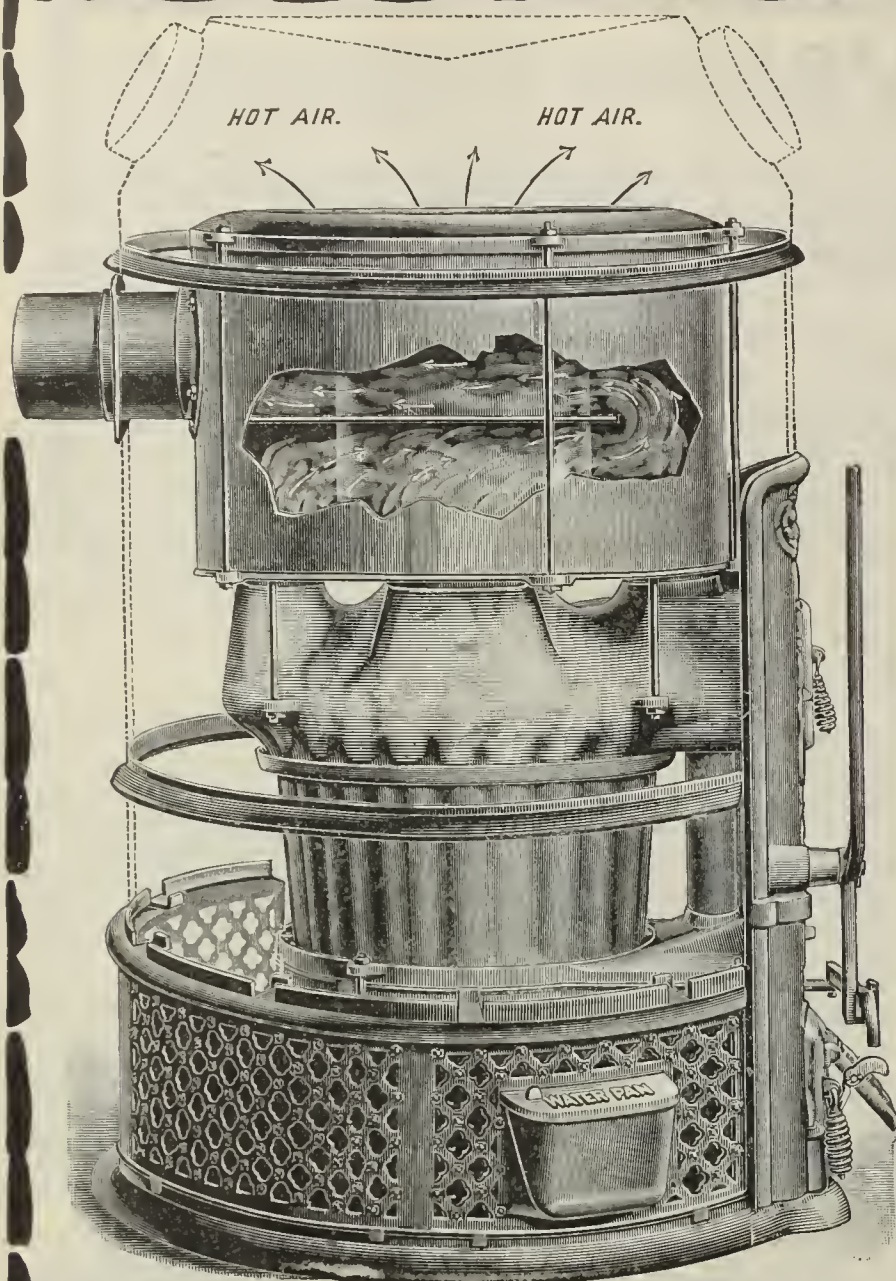
Send for Catalogue and Price-List.

THE B. C. BIBB STOVE CO.,
BALTIMORE, MD.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.
MILWAUKEE, WIS.



A WORD IN SEASON.

The National Furnace

(200 Series)

Has a Great Reputation

IT IS A

WONDERFUL HEATER.

LOW IN PRICE.

DO NOT LET YOUR COMPETITOR GET
THE AGENCY.

WRITE TO DAY FOR BOOKLET.

Chas. C. Heath & Co.

BALTIMORE.

PHILADELPHIA.

Up-to-date Air-Tighters.

We Want Your Business!

Our Goods Are Strictly HIGH-
GRADE and DURABLE.

We Make 65 Styles and Sizes of
AIR-TIGHT HEATERS.

Our Heaters are made of Blue Polished Steel.
Superior Finish. Best Proportioned Stoves made.
Our Castings are Smooth. Our Mounting is
perfect.

Screw Draft, Spark Arrester, Extra Heavy
Linings, Plate in Cover, Hinged Cover, Rein-
forced Tops that will not Warp.

Fuel Opening made with Wire Edge, prevent-
ing buckling and getting out of shape.
Bottoms Double Seamed. Feet Bolted to Cleats
underneath Stove to prevent slipping.

Large Capacity. Prompt Shipment
GUARANTEED.

Quincy Foundry
& Novelty Co.,

QUINCY, ILL.

Write for Catalogue and Prices.



COSEY-Style C. HOT BLAST.



ROYAL-Style A.

Gurney

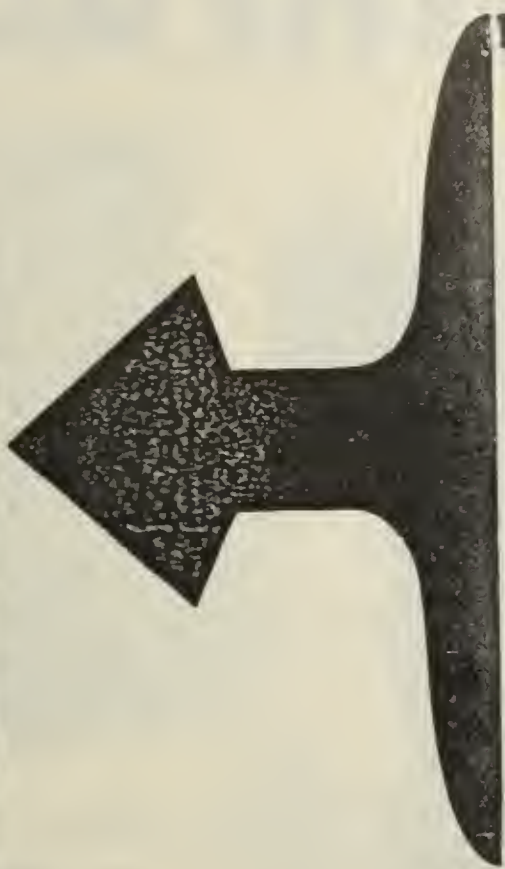
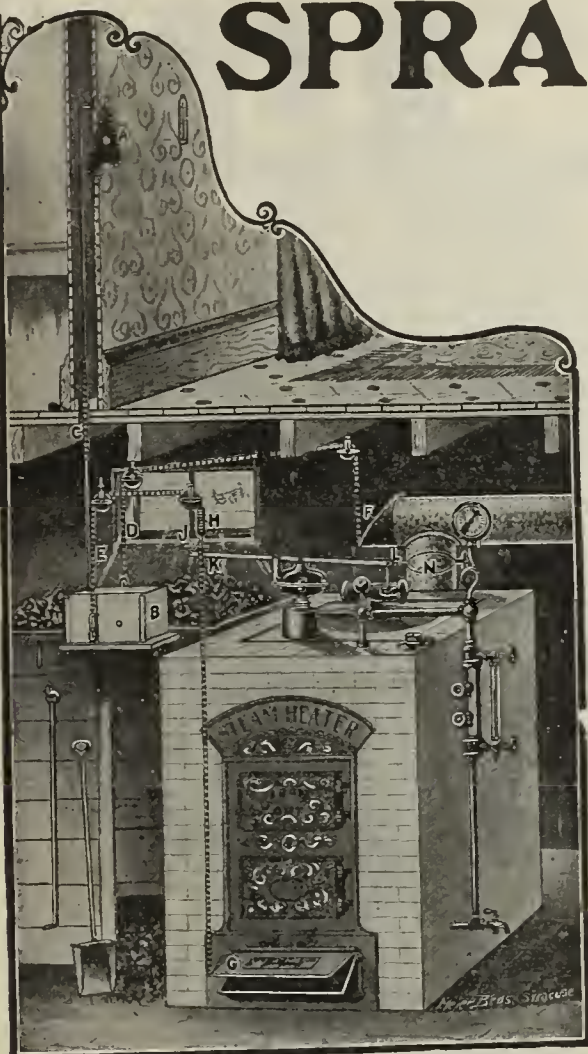
HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS

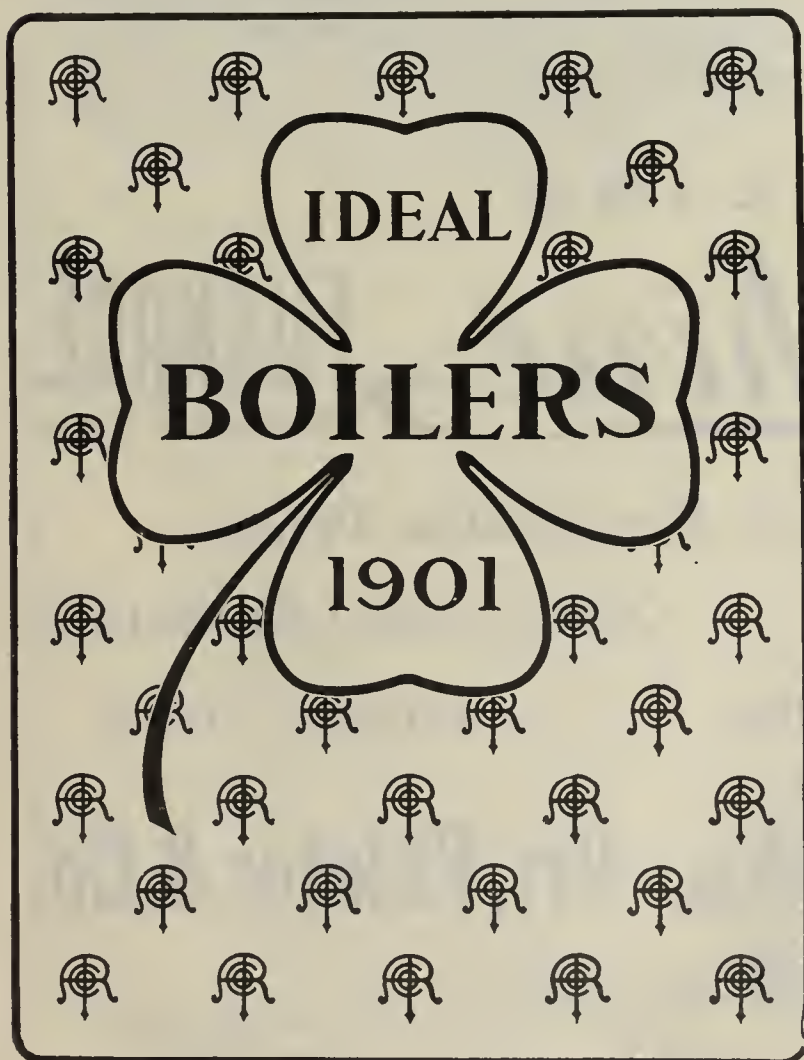
BOSTON, - MASSACHUSETTS

SPRAGUE Damper and Valve Regulator.



A POINTER. Sprague Regulators will do more work to the square inch than any other heat controlling device made. Also they are so simple that they do their work better. Refer to lettering in cut and note simplicity as follows:
 "A"—Sensitive plate. "B"—Spring motor for operating dampers, etc. "C"—Aluminum wire connection between plate and motor. "D" and "E"—Check and draft damper chains. The diaphragm connections "K," "H" and "J" are used only with steam. Otherwise "Water" and "Air" heater connections are made same as shown. Get catalogue giving other pointers in regard to merits, also other people's views. Installed by us on 30 days' trial when consistent. Write at once and secure territory rights. Guarantee is unlimited.

Made by **HOWARD THERMOSTAT CO., Oswego, N. Y.**



OUR NEW

Boiler Catalogue

NOW READY.

A postal card request
will secure a copy...

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

CHICAGO.

New York,

Philadelphia,

Buffalo,

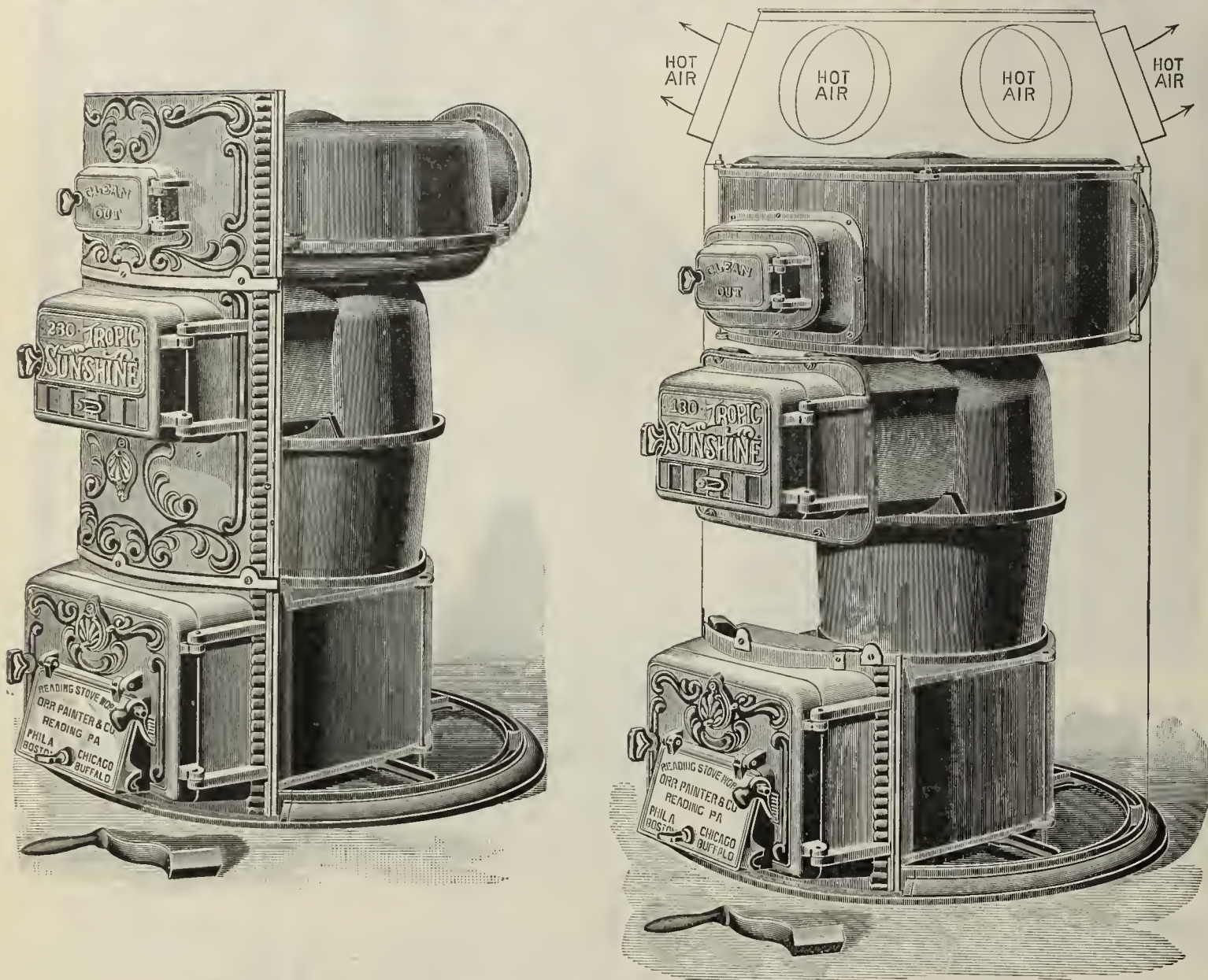
St. Louis,

Minneapolis

and

Denver.

HEALTHFUL HEAT.



NEW LINE

TROPIC *Sunshine* **FURNACE.**

First-Class Furnaces at Reasonable Prices.

Full or Plain Front.

Cast or Steel Radiators.

With or without Gas Ring.

Triplex Grate.

The Reading Stove Works,--Orr, Painter & Co.

READING, PA.

BOSTON.

86-90 Canal St.

BUFFALO.

411 William St.

PHILA.

64-66 N. 2d St.

CHICAGO.

153-159 S. Jefferson St.

FORBES (IMPROVED) WARM AIR FURNACE.

ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick,

in radiator will wear for years. Our improvements for 1901 give us a perfect heater.

Triplex Grate.

PERFECT SHAKING.

PERFECT DUMPING.

Each Bar can be separately replaced.



Forbes Furnaces, for Hard or Soft Coal,

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA. PA.

New Leader Furnace

POINTS OF CONSTRUCTION

A SH-PIT has great depth, with flush front.
Full sized door.

Grate in full view, making the removal of ashes very easy—not so with low ash-pit doors.

Not a square inch of solid substance to obstruct the draft, avoiding clinker formation.

Grate is easily taken apart as there are no bolts used. The cutting off of corroded bolts takes time and costs money.

By simply removing the plate in front of the cogs the bars can be replaced by unhooking them from the yokes. This is a new and desirable feature.

Feed Dome is made in one solid casting from fire pit to radiator and offers a large surface for the direct rays of the fire.

Fire Pot is made in two sections, heavy and particularly durable.

Dust Flue is placed in front of the furnace and extends from ash-pit to feed dome. It is large and has a damper.

Radiator is mounted with best quality refined steel.

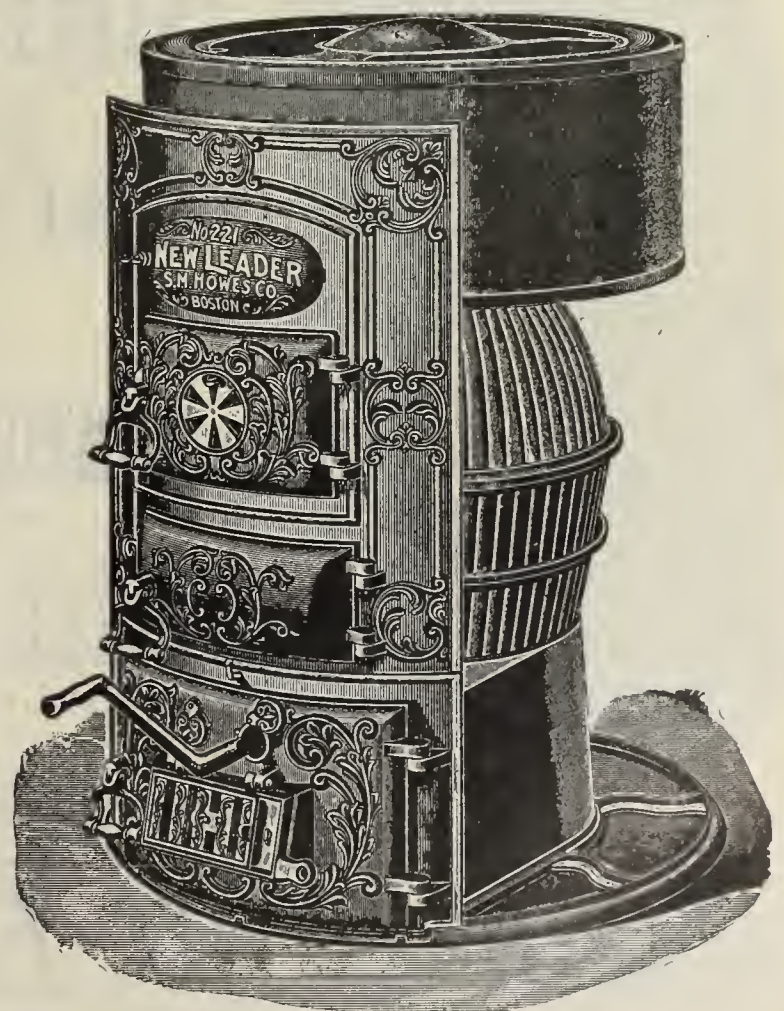
5 SIZES:

20, 22, 24, 26, 28 in. fire pot.

SEND FOR PRICES.

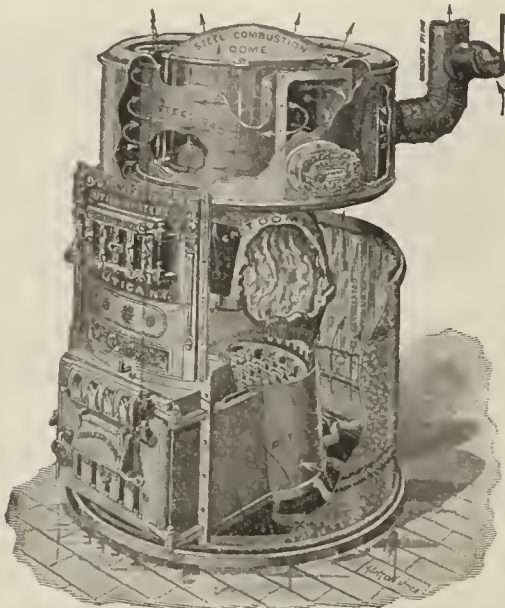
The S. M. HOWES CO.

40-42-44-46 Union St., Boston, Mass.



SUPERIOR FURNACES

Insure the greatest amount of heat for the fuel consumed. They are adapted to all climates and fuels, and embrace in their construction the latest and most improved features known to modern furnace building. **BUY THE BEST.**



Superior Warm Air Heater.

POWERFUL HEATERS

3 3 3

ECONOMICAL IN FUEL

3 3 3

EASILY OPERATED

3 3 3

ABSOLUTELY
FREE FROM DUST, GAS
AND SMOKE

3 3 3

Ask for our new furnace
catalogue and discounts.



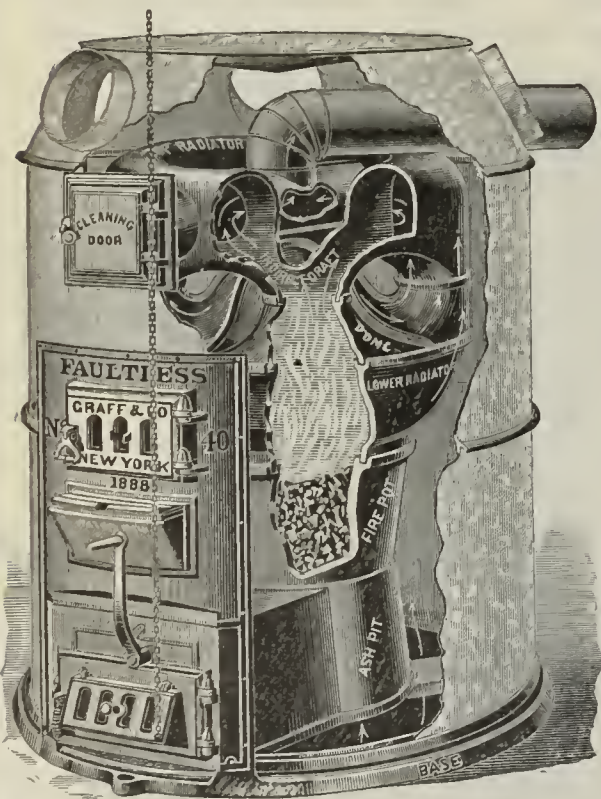
New Superior Heater with Cast Radiator.

UTICA HEATER CO.,

Manufacturers,
UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO., 54 Dearborn St., CHICAGO, ILL., Western Managers.

Our Fall Styles Are Now Ready.



FAULTLESS FURNACES.

Extra Heavy Style—Highest Grade Made.

HERO FURNACES.

ALL-CAST or with STEEL RADIATOR.
Heavy, Durable, Powerful Styles.

COMFORT FURNACES.

Popular Style—Popular Prices.

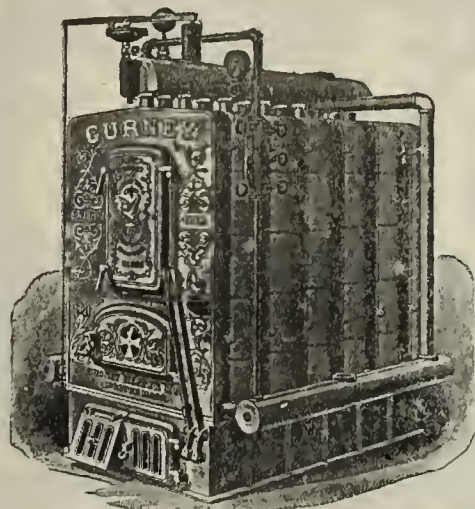
RIVAL FURNACES.

Unique Style—Moderate Prices.

FULL PARTICULARS ON APPLICATION.

The Graff Furnace Co.,

208 WATER ST., NEW YORK.



Bright Idea Steam Boiler.

Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

GURNEY

"Bright Idea" Heater

thinks of it: "My house is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

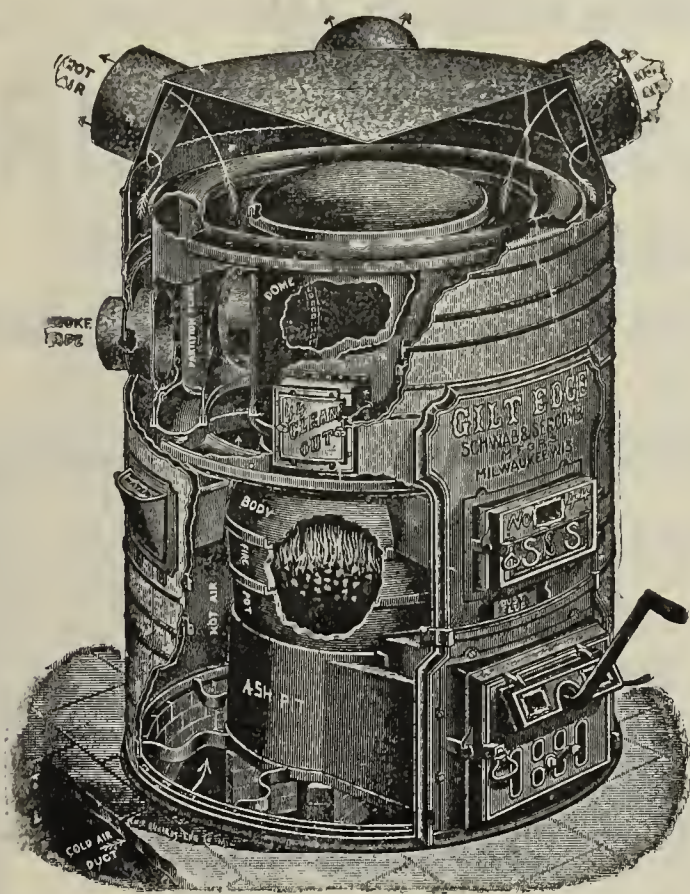
But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.

GURNEY HEATER MFG. CO.,

74 Franklin St., BOSTON, MASS.

111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

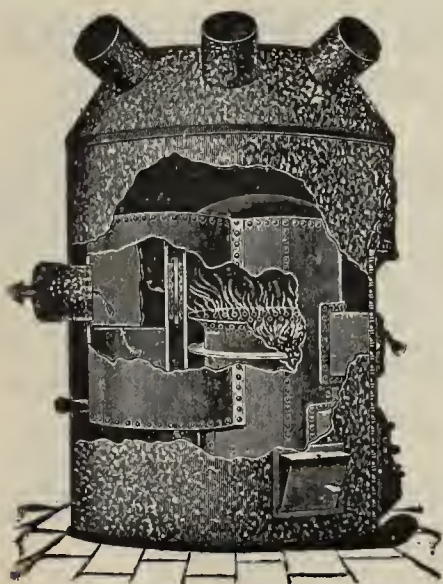


Gilt Edge Warm Air AND Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

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THE HEAVIEST STEEL FURNACE MADE.

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"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

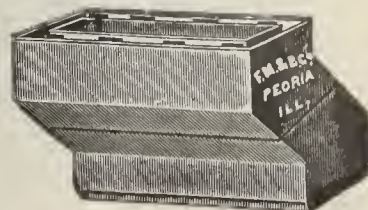
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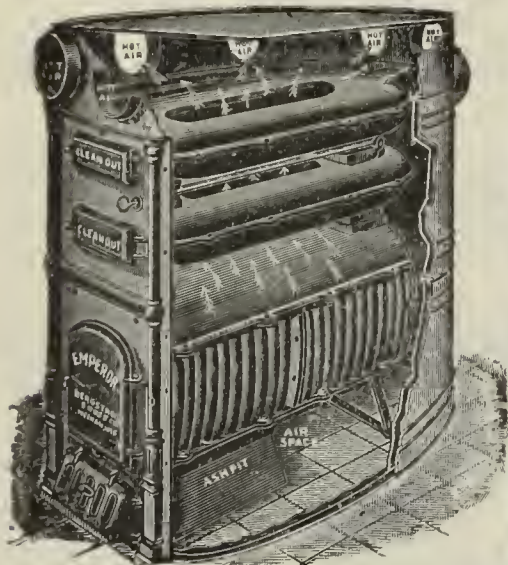
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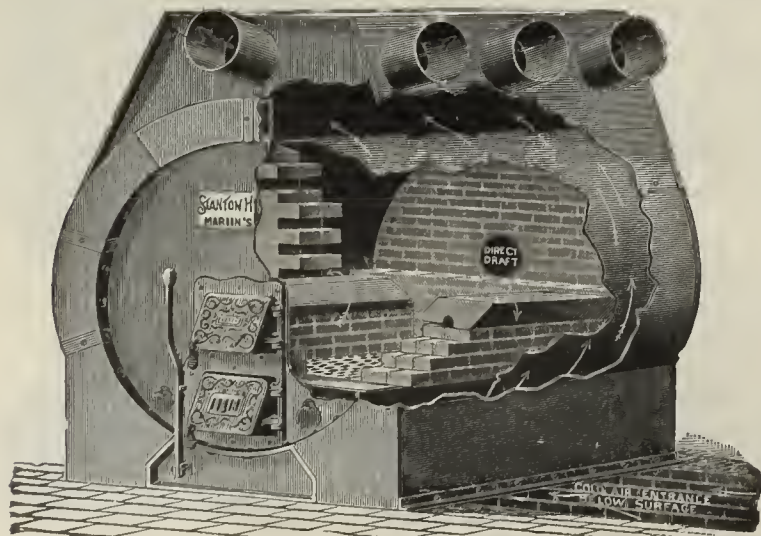
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Furnished for either Brick or Galvanized Iron CHIMNEY.

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The Stanton Seamless Heater, PORTABLE CASED.



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Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly

ROBINSON-HUGHES & CO.

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See our advertisement next week.

It don't follow because you paid \$40.00 for a 22-inch pot Furnace that it is worth it. You might have got exactly the same construction under another name for \$34.50.

There are over sixty manufacturers making exactly the same type of Furnace; some have handsomer fronts than others, some have an extensively advertised name on the front, but the construction is just the same, and the handsome front or extensively advertised name don't add one cent to the real worth of it as a heating apparatus,

A 22-inch pot "Dighton" costs about one-third less.

A "Dighton" having a 20-inch pot is fully equal in heating capacity and more economical in fuel than any Furnace of the above character, will last longer without repairs, will give better satisfaction to your customer and greater profit to yourself.

At any price, from any concern, under any name, you can't get as much real Furnace value for the price you pay for it as we give you in the "Dighton."

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BENGAL FURNACES

YOU NEED THEM IN YOUR BUSINESS.

DON'T KICK

If your delay in securing the Agency for these furnaces has enabled the other fellow to get it.

EASIEST TO SELL.

SURE TO PLEASE.

ALL CAST IRON.

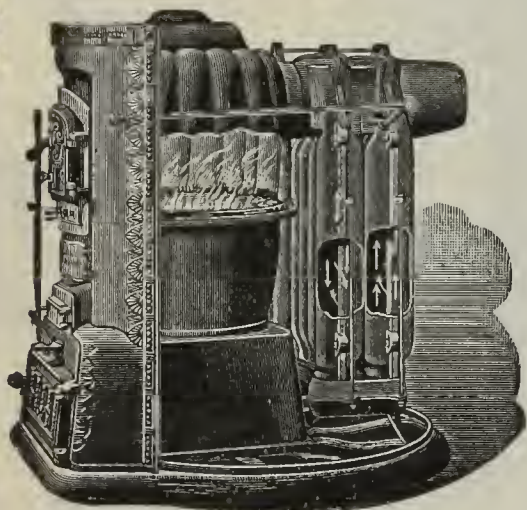
Best and most popular furnaces made.

More radiating surface than any other furnaces their size.

BENGALS HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a **BENGAL AGENCY** at once.

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YOU CANNOT BUY

A FURNACE SUPERIOR TO THE

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BECAUSE IT IS NOT MADE.

Our Heaters are made in all sizes and for all kinds of fuel.

EVERYTHING IN THE HEATING LINE.

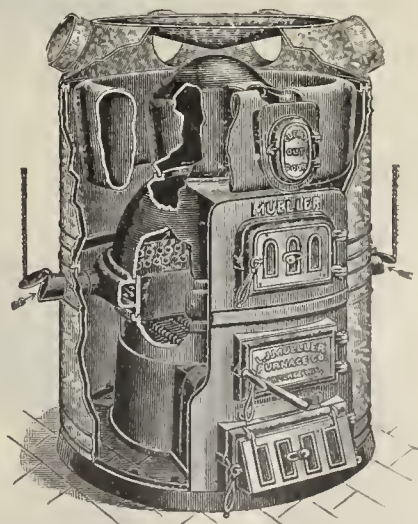
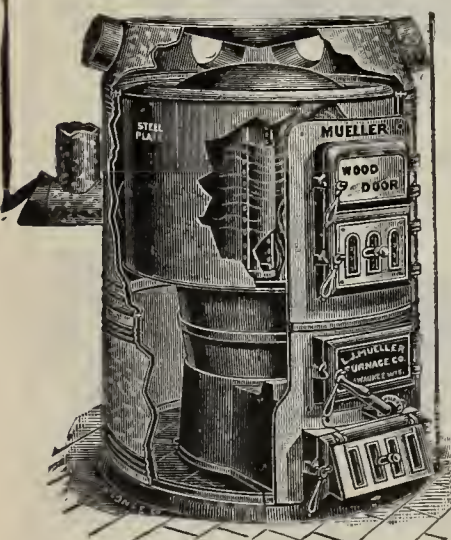
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*The
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SO EASY!

Thoroughly tried and
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Send for Booklet "A"
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the

**B & A
UNION
ELBOW-
VALVE.**



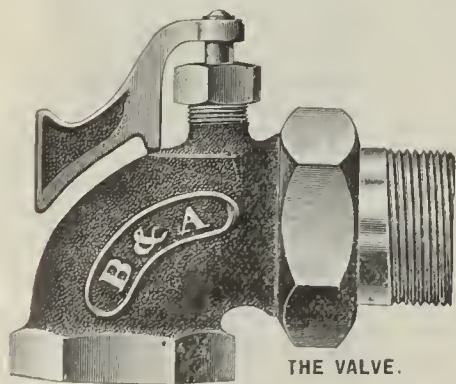
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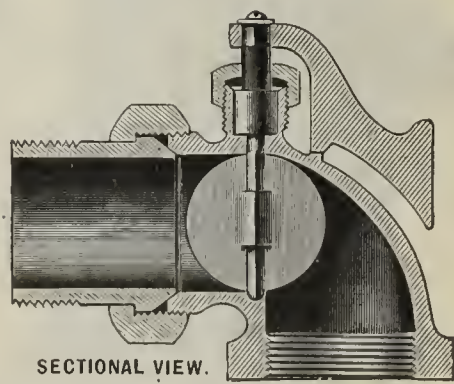
Hot-Water and Steam Heaters,
"B & A" Elbow-Valves

...and...

Union Elbows.



THE VALVE.



SECTIONAL VIEW.

BLAKE & ANDROS, Manufacturers, 28B Portland St., Boston, Mass.



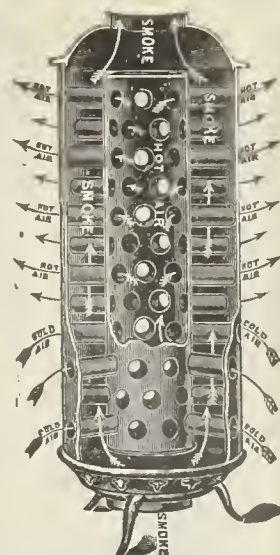
A Tea Kettle Boils Quicker on my Chimney than on my Stove.

A fire in a red glow represents 1200 degrees of heat, a draft through this carries the heat out of the chimney unless intercepted by a cross tube **Rochester Radiator**, when nearly all this waste heat is conveyed into the room by the rapid circulation of air through the tubes and saved. This appeals to common sense and is verified by the most thorough scientific test.

The **Rochester Radiator** is a satisfactory article to sell and one that affords the dealer a good profit.

ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.



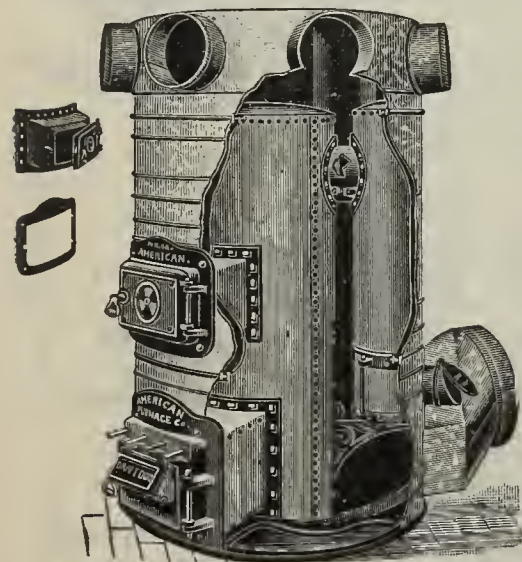
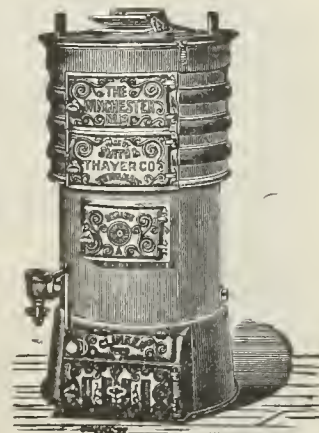
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How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

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Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

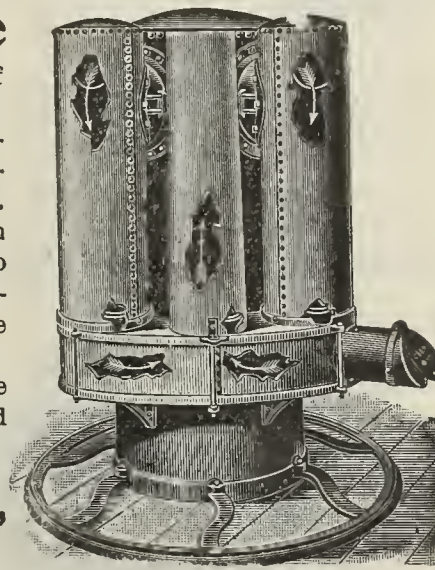
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The **American Furnace** is made for the better class of trade; is durable, clean and economical in fuel.

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they se'l themselves. Every house owner will want one on sight. And then every one who sees it in use will want one too.


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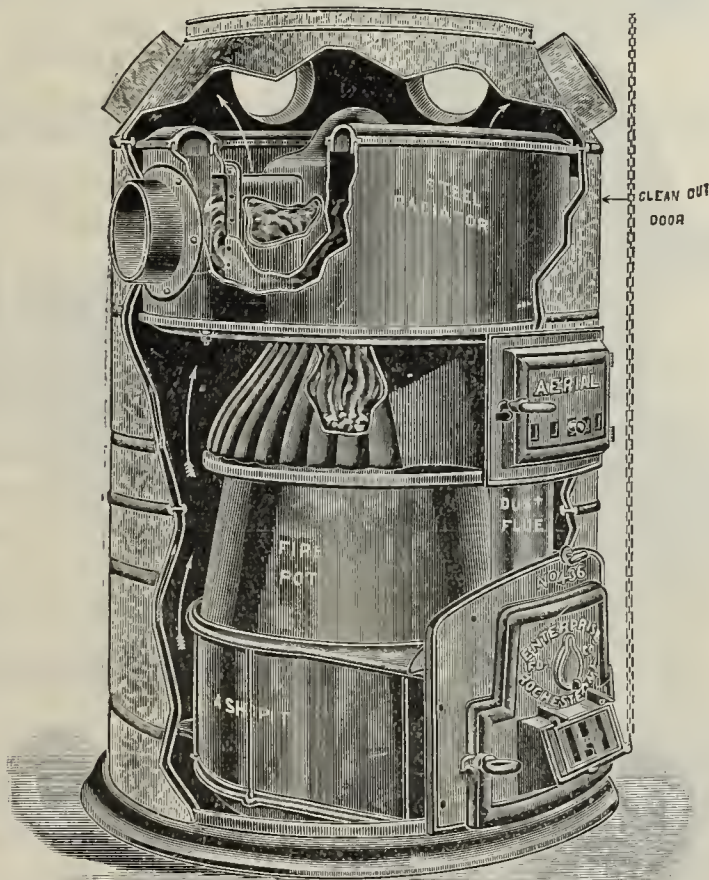
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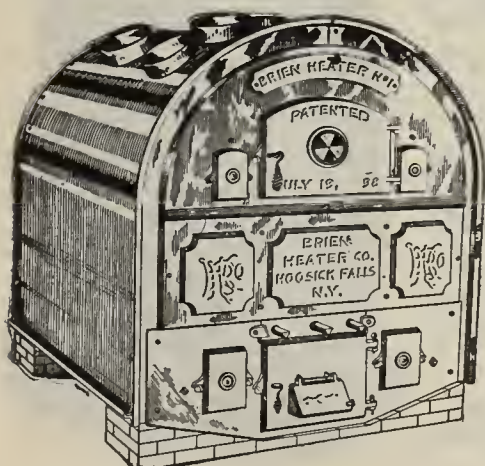
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PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

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HOT AIR**



HEATING BY COMBINATION STOVES
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Suitable for Large or Small
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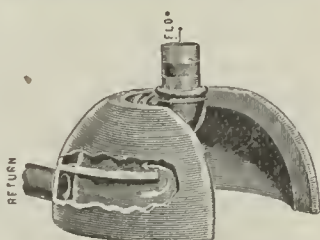
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No Joints Inside to Leak.

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They Fit Any
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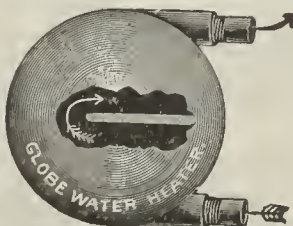


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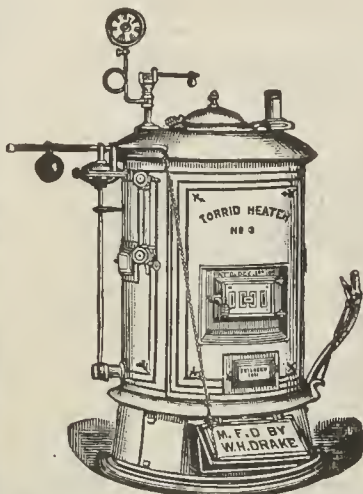


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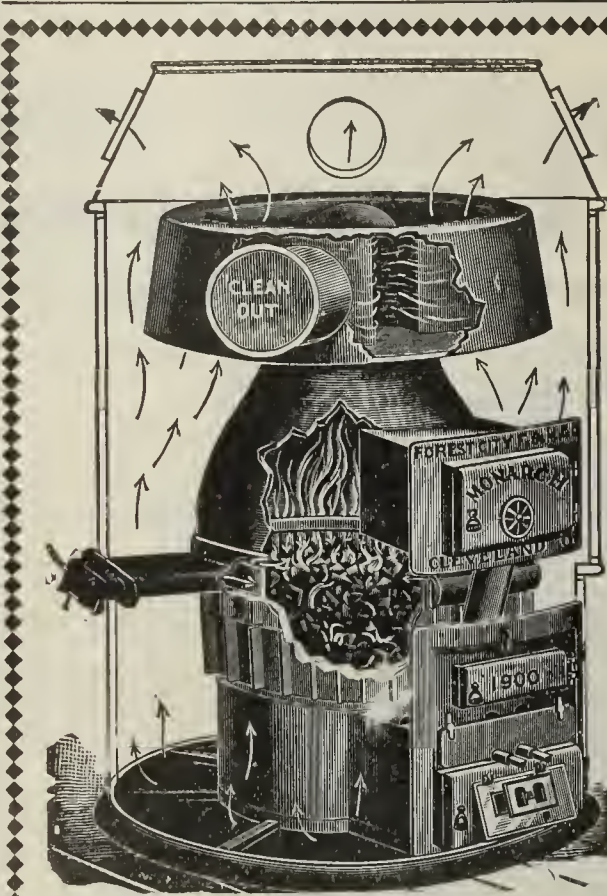
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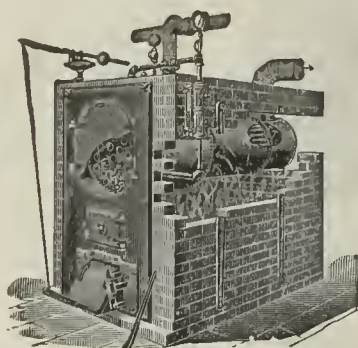
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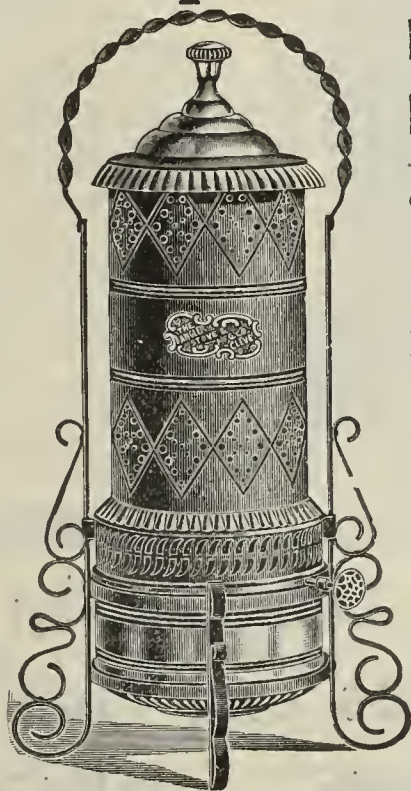
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VARIOUS FORMS OF VENTI- LATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
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FAILS TO BAKE ON BOTTOM	56-62

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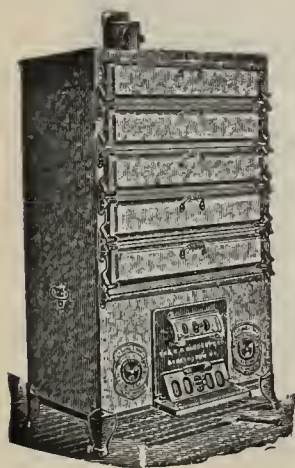
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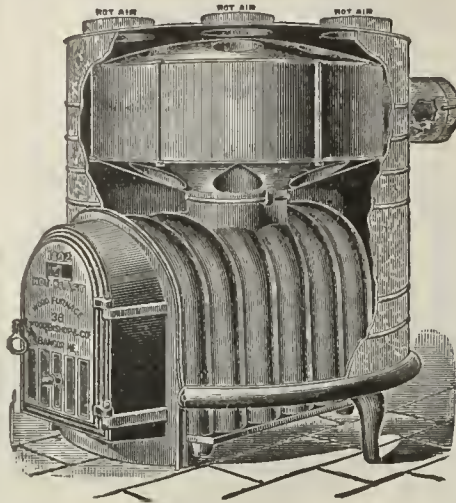
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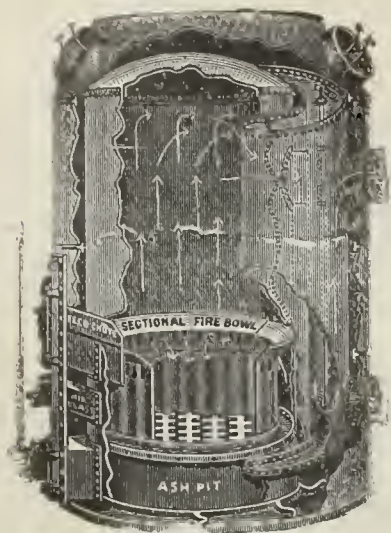
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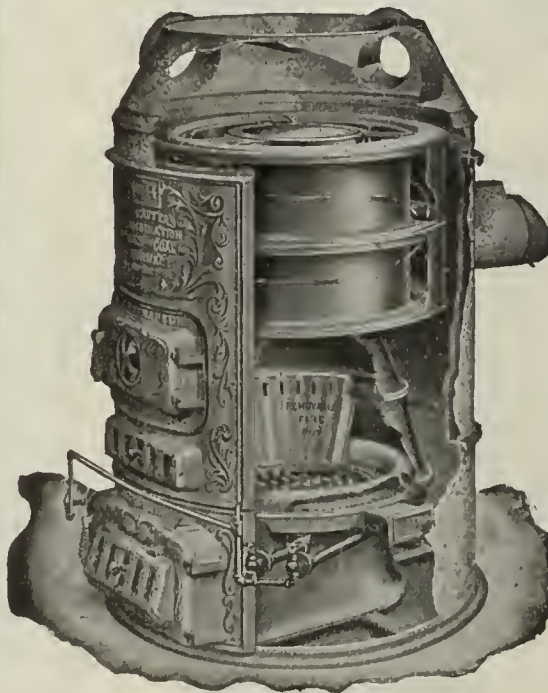
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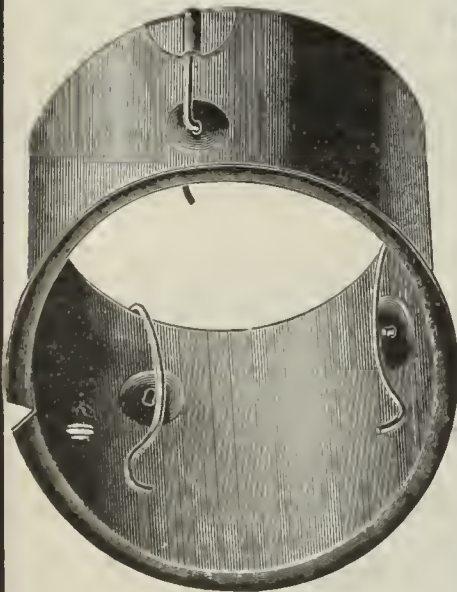
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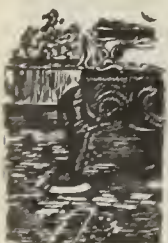


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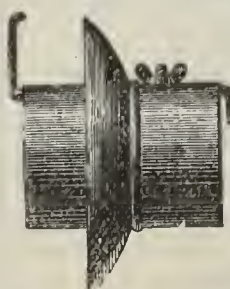
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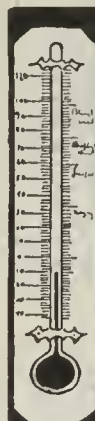


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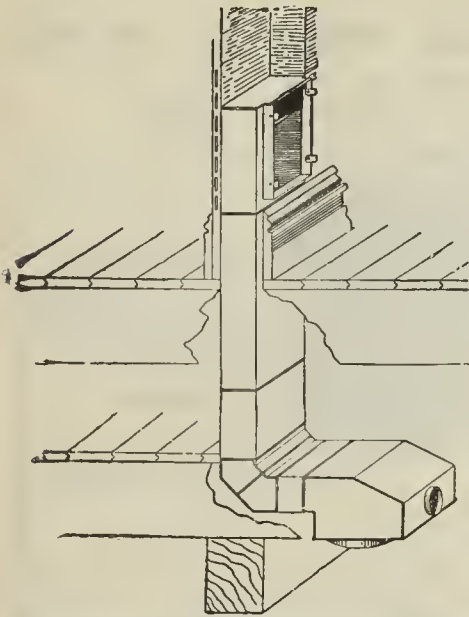
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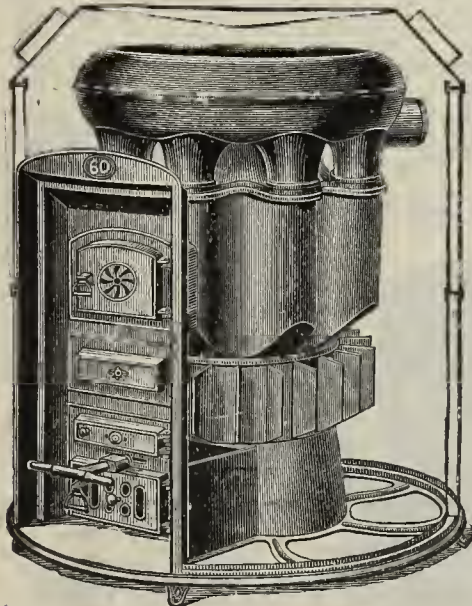
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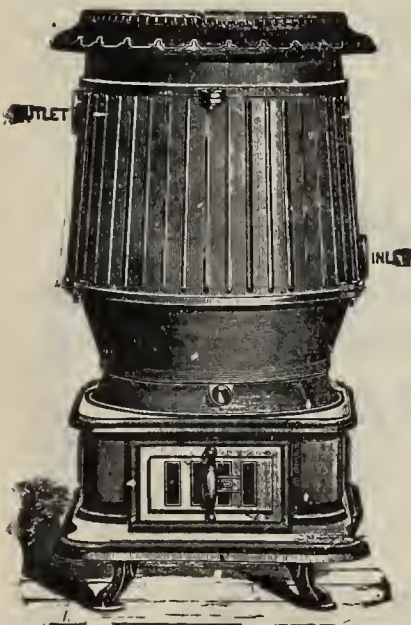
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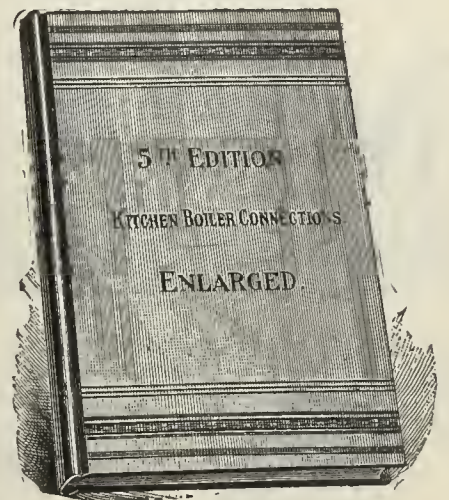
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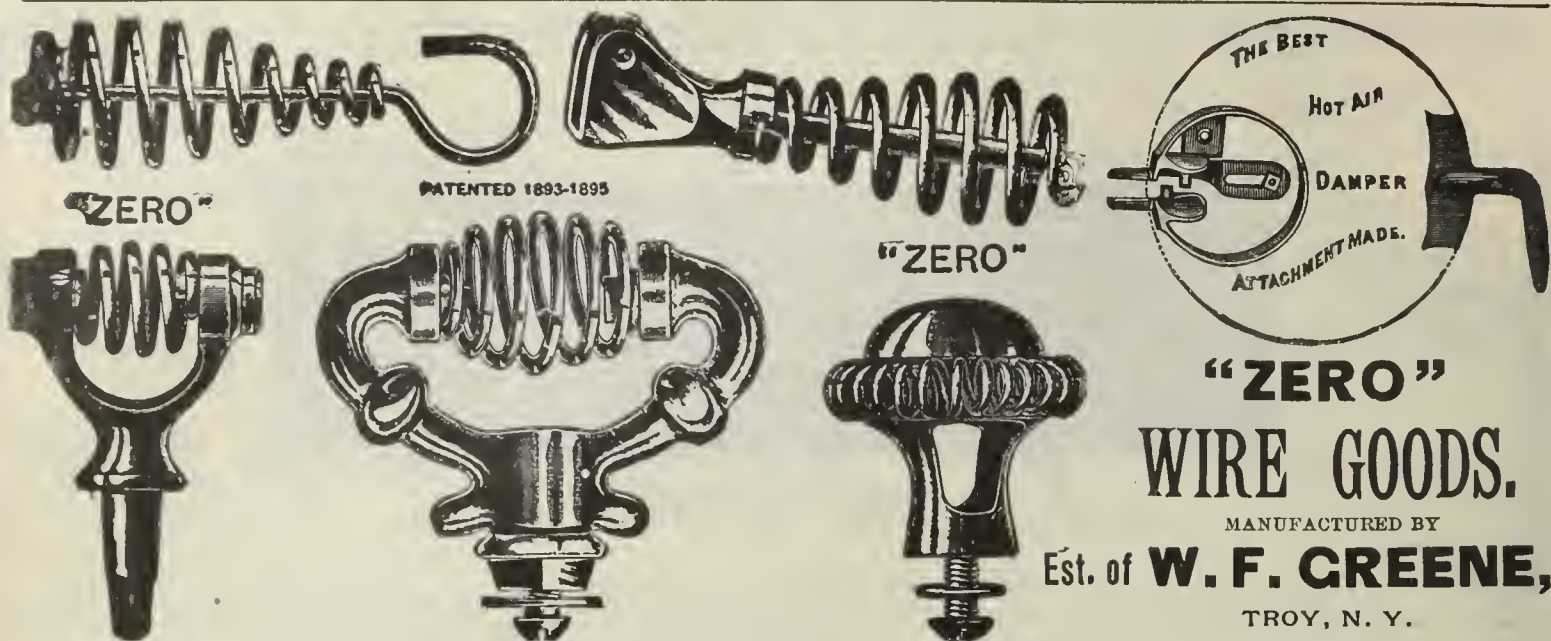


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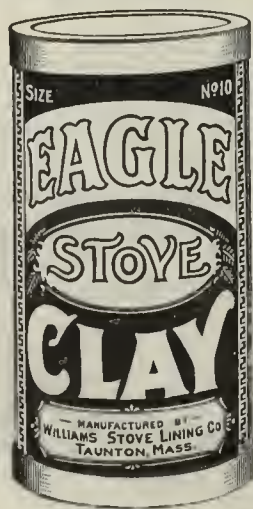


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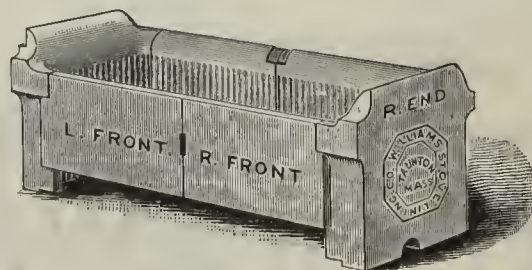
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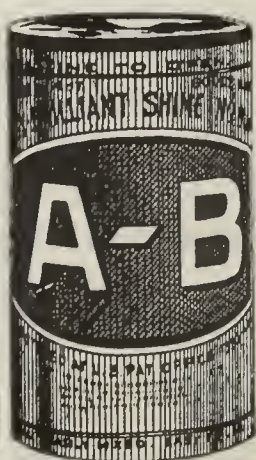
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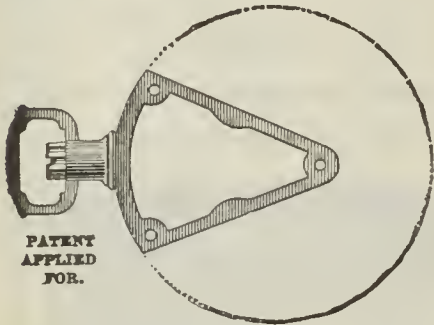
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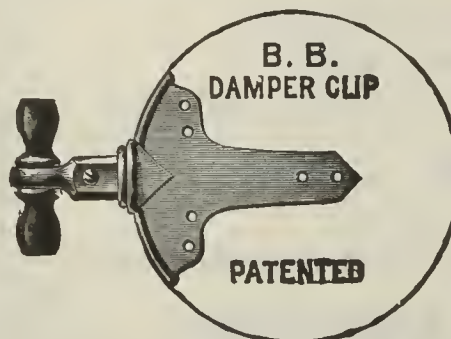
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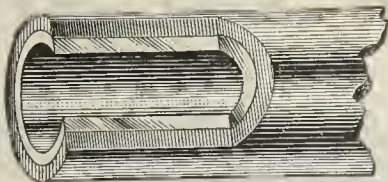


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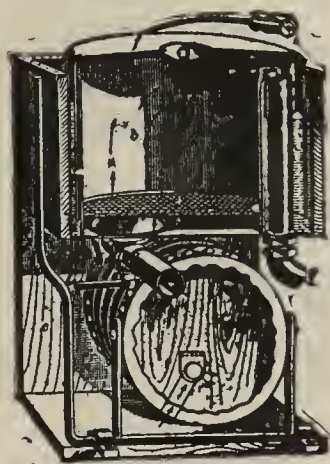
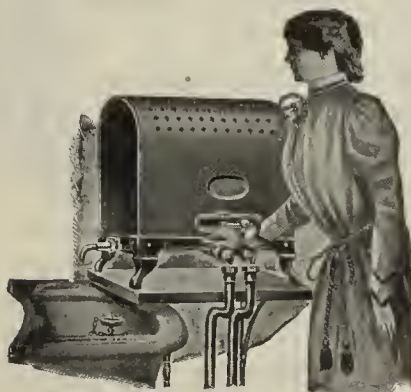
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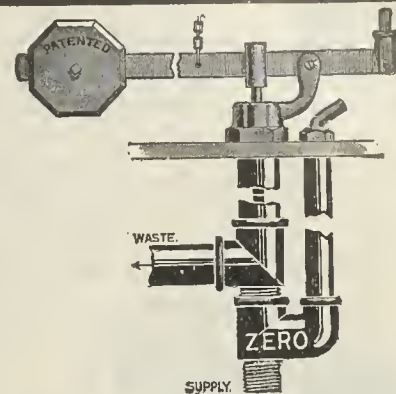
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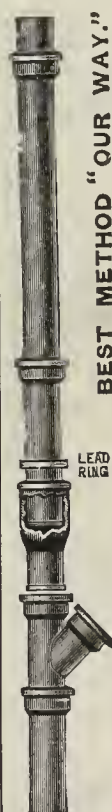
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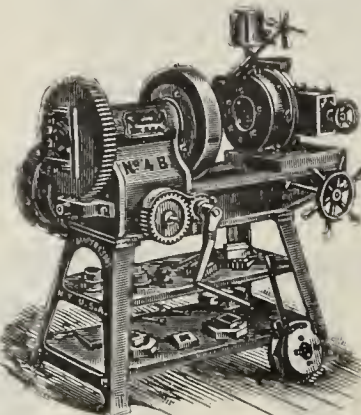
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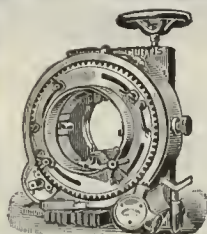
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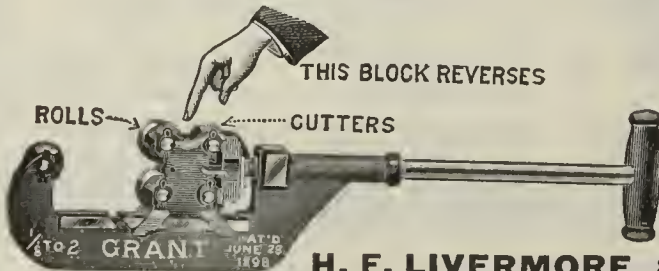


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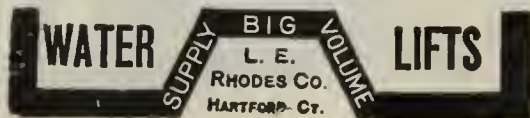
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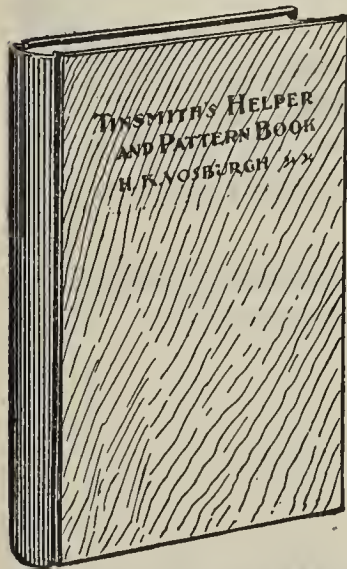
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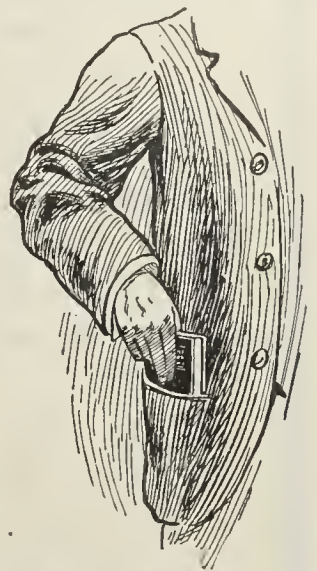
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We present a new and improved edition of this useful book, believing it to be one of the most important assistants to tinnerns and other mechanics that is published. The diagrams and patterns are now illustrated by means of new engravings, greatly improving the appearance of the book. The tables, rules and recipes have been carefully revised, these, with important additional tables, being printed from new type.

This edition is printed on fine paper, and bound durably in cloth, in a convenient pocket size.

The Tinsmiths' Helper is not intended to be a comprehensive treatise on sheet metal pattern cutting, which field is covered only by "The New Metal Worker Pattern Book," but it contains a collection of patterns of the most common occurrence, described in the plainest way. It meets the requirement of a simple hand-book for young tinnerns, and will be an invaluable aid to all sheet metal workers for the compilation of tables and rules alone. A list of the contents is given below.



DIAGRAMS AND PATTERNS.

To Find the Center of an Arc.
To Describe an Octagon Within a Given Square.
To Describe an Octagon Within a Given Circle.
To Describe Breasts for Cans.
Can Breasts.
Pattern for Cone.
To Describe Pattern for Flaring Vessels.
To Cut Hood for Stove Pipes.
To Describe Patterns for Flaring Tinware.
The Old German Rule for Patterns for the Cone.
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Flaring Vessel in Three Pieces.
Rectangular Funnel.
For Strainer Pail or Watering Pot Breast.
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To Find Length of Sheet Required for Oval Boiler. Common Method.
Oval Boiler Cover.
Measure Lip.
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Heart with Square and Compass.
To Describe a Star.
Pattern for Cutting Bails. To Describe the Gores.
To Describe an Oval.
To Describe Oval with Diameters as 5 to 8.
To Describe an Oval. Two Other Methods.
To Describe Oval by Means of String, Pins and Peucil.
To Describe Pattern for Flaring Oval Vessels. Two Pieces.
To Describe Pattern for Flaring Article with Straight Sides and Round Ends. Two Pieces.
To Describe Pattern for Oval Flaring Vessel. Four Pieces.
To Describe Pattern for Flaring Hexagon Article.
To Describe Pattern for Flaring Square Vessel.
To Describe Pattern for Flaring Article with Square Top and Base a Rectangle. Two Pieces.

To Describe Tapering Octagon.
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Round Base and Square Top Article. Two Pieces.
Rectangular Base and Round Top Article.
Square Base and Round Top Article. Two Pieces.
To Describe a Square or Right Angle Elbow. Two Pieces.
To Describe Elbow. Quick Method.
To Describe Three-Piece Elbow.
To Describe a Right Angle Elbow. Four Pieces.
Elbow in Five Sections.
To Describe Pattern for Obtuse Elbow.
To Describe a Tapering Elbow.
To Obtain Length of Piece for Tea Kettle Body.
Mode of Stringing Patterns.
String Pattern.
Description of Boiler Block.

EPITOME OF MENSURATION.

Mensuration of the Circle and Its Sections.

Mensuration of Surfaces.

Mensuration of Spheres.

Mensuration of Cones and Pyramids.

Mensuration of Solids and Capacities of Bodies.

Mensuration of Cylinders.

Mensuration of Polygons.

TABLES, RULES AND RECIPES.

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Table of Weight per Square Foot of Iron Plates, from 1-16 up to ½ Inch Thick.
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Tables of Sizes of Tinware in the Form of Frustum of a Cone.
Table of Effects upon Bodies by Heat.
Practical Receipts for Solders, Cements, &c.

PRICE, ONE DOLLAR, POSTPAID.

David Williams Company, Publishers. 232-238 William St., New York.

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THE KELSEY WARM AIR GENERATOR has been known by this name and so advertised for twelve years, and is manufactured solely by the Kelsey Furnace Company, Syracuse, N. Y.

The splendid results obtained with the "Kelsey" are becoming better known each year, and the demand for them has increased so rapidly that a certain firm or company, hoping to reap some of the benefits of the now famous "Kelsey," have used the term "Warm Air Generator" in connection with a heater they make.

The construction, however, of the Kelsey Warm Air Generator, being fully covered by patents, will be protected and cannot be successfully imitated.

**The Kelsey Warm Air Generator
will increase your business.** ♡ ♡

**The Kelsey method of warming
the air is the best method.** ♡ ♡ ♡

KELSEY FURNACE CO., SYRACUSE, N. Y.

Makers of the Kelsey Warm Air Generator.

Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. ♡ ♡ ♡ ♡ ♡
Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

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This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware ♡ ♡ ♡
Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, October 5, 1901.

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CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand

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Building Activity in New York.

Judging from the reports of architects and builders, as well as from personal observation, the present year seems likely to be one of the most notable in the history of New York City as regards the erection of large new buildings; and also for the extent of the general building operations undertaken. The improvements now in hand, or lately completed, are not confined to any one locality, although they largely follow the general line of Broadway, and also cover the lower extremity of the city. The observer cannot fail to notice, in passing to and fro, the number of instances in which old buildings are being demolished to make room for more modern and imposing structures. He will also take note of the many cases where foundations are being sunk to bed rock by means of enormous iron or wooden caissons, as well as the many examples of steel skeleton frame construction that are rapidly mounting skyward. The many tall business buildings now going up will radically alter the sky line of the city. It is estimated that the amount of capital invested in buildings contracted to be ready for occupancy after the first of the coming May reaches the enormous total of at least \$30,000,000. A noticeable feature of the present building operations is the large number of high-class flats and apartment houses which are being erected in the upper part of New York, some of these being on a scale of magnificence never before attempted. These buildings, it is said, are no sooner finished than they are filled up with tenants. The remarkable increase in the volume of building operations in New York this year is illustrated in the statement that permits were taken out in the boroughs of Manhattan and the Bronx from January 1 to the middle of September for 2148 building improvements, estimated to cost over \$94,000,000. This compares with 1320 permits, for buildings to cost \$42,000,000, in the corresponding period of last year. It is very evident that building operations for 1901 will be on a much more elaborate and expensive scale than have been undertaken in any former year.

The Copper Situation.

The recent sharp drop in Amalgamated Copper Company shares following the passing of the extra dividend by the directors and a concurrent decline in the shares of other copper companies have attracted public attention to the condition of the copper market. For

some time past it has been felt by the trade that the price of copper in the United States has been artificial. The advance in copper about two years ago to the level of 17 cents per pound was justified then by an enormous expansion in the demand for copper all over the world, while the production at that time was increasing very slowly. The foreign demand, which has absorbed a very large proportion of the copper produced in this country, has been steadily declining during the past twelve months, while the home consumption has not expanded sufficiently to atone for the decrease in exports. Nevertheless, the producers have managed to maintain the price of the metal at the high level up to the present time. To the high price of copper is largely attributable the existing dullness in the market, because the domestic consumers are limiting their purchases to immediate needs, in the hope of a downward reaction in value, while foreign consumers are enabled to buy copper in Europe at materially lower prices than those ruling in this market. As an illustration of the falling off in the foreign demand for copper, it may be stated that our exports, which amounted to 90,747 gross tons in the first part of 1900, declined to 60,335 tons in the second half of the year, and fell to 50,027 gross tons during the first six months of the current year. In the meantime our production has remained stationary, being 134,577 tons during the first half of 1900, 134,404 tons during the second half and 133,394 tons in the first six months of 1901. Furthermore, the imports of copper have increased considerably, American merchants finding it profitable to import European copper rather than purchase the home product. As the domestic consumption this year has certainly not so far outstripped that of the corresponding period of 1900 as to make up for the radical decline in exports, the deduction is obvious that the large copper companies have been accumulating heavy stocks of the metal. This fact would naturally have a weakening influence on the market. Under the circumstances, it is fair to conclude that the maintenance by the great producers of the present level of prices will tax their resources to the greatest limit. Nevertheless, the conviction prevails that there will be no serious break in prices in the near future. The powers that rule the American copper market are believed to be abundantly able to maintain prices if they so decide.

The United States Steel Corporation.

In many respects the financial statement issued by the United States Steel Corporation for the first six months of their existence is extraordinary. The figures, showing average earnings of over \$9,000,000 per month, are higher than any who were not among the initiated had any conception of, and reflect the great prosperity of the iron trade at the present time. The fact that in August the earnings reached their maximum, although a considerable number of the admittedly most profitable plants were idle, may possibly be explained by methods of accounting. In various directions the splendid showing of the United States Steel Corporation will have its effect, but there is probably no single feature which is more commended in the business community generally than the

fact that so full and satisfactory an interim report has been given out. After some of the recent experiences with industrials, the course taken by the Executive Committee is commended by all.

Success in Advertising.

Government statistics are authority for the statement that the business men of this country are spending something like six hundred million dollars annually in advertising, and it is estimated that nearly one million business houses are regular advertisers. This statement suggests the magnitude to which this department of business has grown of late years. Thousands of men are now devoting their entire time to the preparation and placing of advertising matter and tens of thousands make a living by canvassing for advertisements. An increasing number of large concerns nowadays maintain an advertising department as a part of their equipment and pay handsome salaries to the experts who manage this branch of their business. In short, a new profession—that of advertising expert—has arisen, which offers attractive pecuniary prizes to those who succeed in it. There are few specialties to-day that are more valuable to the young man in business than a good working knowledge of advertising. The demand for well equipped advertising men is away in excess of the supply. To meet this demand a well-known Philadelphia business school has just instituted an advertising course as a new feature of its curriculum. It proposes to furnish to those who are employed or engaged in business pursuits during the day instruction in advertising by means of evening classes. The course mapped out is simple, yet thoroughly comprehensive, including a series of lessons and lectures designed to develop the qualifications essential to a good advertising man—namely, common sense, originality, power of expression and knowledge of human nature. To this should be added a thorough knowledge of the business to be advertised, without which efforts to secure public attention will lack that definite and practical character which is essential to the best results. In any instruction on this subject it should be prominently brought out that many of the popular attempts to catch the public eye, while striking and amusing, are very often unbusinesslike and grotesque. Much of the best advertising is done by men who are in close touch with the business, and without a professional training have developed a skill in this direction. In almost every concern, manufacturing or mercantile, large or small, there is an opportunity for the exercise of thought and skill in this field, inasmuch as good advertising contributes so largely to success in business. Practical knowledge in this field is good business capital.

Contracts With Time Limits.

A fruitful topic of discussion among the plumbing contractors of New York City at the present time is the trouble they are having in connection with contracts which they have signed for the completion of work within a specified time. A keen interest is felt in the subject owing to the inability of many of the contractors to meet the requirements of the time clause in their contracts, caused by the difficulty of securing some lines of goods which are very scarce in the market. This is particularly the case with some sizes of iron pipe, also with enameled bathtubs and other enameled goods, as well as several lines of specialties. Evidently those who had contracts to award had a better idea of the condition in the supply of such goods than some of the contractors, for in several instances they were unwilling to award the con-

tracts unless the supply houses consented to join the plumbers in a guarantee to supply the goods within the time specified for the completion of the contract. This has led to much hard feeling, and in some cases to threats that penalty should be exacted for the delay in fulfillment of the contract. In order to avoid trouble from this quarter some plumbers have made special efforts to secure the needed goods, even though they had to pay greatly increased prices for them, thereby reducing their profit to the danger line. In other instances, however, it was found utterly impossible to secure the goods and the owners were forced to delay the completion of their buildings. This condition of things has also caused the plumbers and supply houses who were behind with their contracts to make strenuous demands upon the manufacturers, in order that the former might be enabled to avoid loss. There are those who have but little sympathy for the predicament in which such contractors are found. They argue that careful business men are continually annoyed by those who are not only willing but eager to sign any form of contract, regardless of any clause it may contain that is likely to cause trouble or expense. There can be no doubt that, throughout the country, there are too many plumbers, steam fitters and sheet metal workers who are not careful in reading contracts and informing themselves of the full meaning of some seemingly harmless clauses. Under favorable conditions these clauses seldom lead to trouble, but they are always a menace in case any emergency arises, and should be stricken out or modified before the contract is signed.

The National Hardware Association.

The annual convention of the National Hardware Association, which takes place next week in Cleveland, Ohio, promises to be the largest gathering of that influential body yet held. The programme provides for the discussion of a number of subjects of interest and importance to the trade. Doubtless the deliberations of the convention will bring to the front many matters bearing more or less closely upon the interests of some of our readers. Many of the merchants composing the membership of the National Hardware Association are very large handlers of tin plates and sheet metals, as well as of goods used by the roofing, plumbing and heating trades, and the association embraces a tin plate and sheet metal section. It is obvious, therefore, that the views and actions of such an organization should be of interest to many in the trades represented by this paper.

One feature of especial interest connected with the coming convention is the fact that a call has been issued by a number of well-known manufacturers of the country for a meeting in Cleveland, at the time of the convention, to consider the advisability of forming an American Hardware Manufacturers' Association. While both the retail and wholesale hardware merchants are looking after their own interests more systematically and efficiently than ever before, by means of local, State and national associations, and have derived decided benefits from the same, there is certainly an equal reason for the formation of a manufacturers' association. With such an organization they would obviously be in a better position to meet anything like dictation, or to work together for the introduction of reform in trade usages, which, for the advancement of their own interests, or perhaps for the welfare of the trade as a whole, are desirable. There are many matters in which manufacturers have a concern which would probably come within the scope of such an organization,

such as terms of sale, classifying the jobbing and retail trade with reference to prices, questions concerning freight rates, classification, deliveries, &c. Besides this, such an association could undoubtedly do much in the direction of educating the less experienced manufacturers in proper business methods in the distribution of their products. With the recognized ability of the hardware manufacturers and the great interests they represent, an exceedingly strong and influential organization might be effected, which would have the respect and advance the interests of the trade at large.

In contrast with the phenomenal activity of labor in the United States is a report of labor conditions in Germany just sent to the State Department by the United States Consul-General at Coburg, which says that from all centers of mining, iron working and machine making in Germany come reports of short hours, dismissal of hands and cutting down of wages. For every 100 industrial vacancies the Consul-General says that there are over 160 applicants. The labor offices report an increased rush for positions, particularly by metal workers and those employed in the building trades. The outlook the Consul-General regards as very gloomy, as the depression in business in the German Empire is quite marked.

The annual report of the Massachusetts Bureau of Statistics, covering the year 1900, gives some interesting information about strikes in that State. Of the 189 cases of labor troubles occurring last year 10 were occasioned by questions relating to hours of labor alone, 28 to hours of labor and wages, 90 to wages alone and the remaining 61 were occasioned by a variety of causes. Of these 189 strikes 53 were successful, 10 partially successful, 25 were compromised, 74 failed, 14 were adjusted to the satisfaction of both parties and the balance were pending at the close of the year. Expressed in percentage, 28.04 per cent. of the contests terminated successfully for the employees, 5.29 per cent. were partially successful, 39.15 per cent. failed and 7.41 per cent. were satisfactorily adjusted.

THE TWENTY-FIRST OPENING OF THE NEW YORK TRADE SCHOOL.

The opening of the evening classes for the twenty-first year of the New York Trade School will occur on October 14. Those who are familiar with the school will find on approach that a new office building two stories in height has been erected on First avenue midway between Sixty-seventh and Sixty-eighth streets. The upper floor of the building will be occupied by a reading room, 40 x 50 feet in size. This will be well stocked with the various trade papers devoted to the trades taught at the school, as well as many valuable books of a technical and reference character for the assistance of the students. The first floor, which is to be used for the office, will be arranged to enable the superintendent, H. V. Brill, and his assistants, to more conveniently attend to the requirements of their work. The new building is provided with a vault in which valuable papers and the records of the institution can be conveniently kept.

A new and important feature of the instruction given in the school this season will be the raising of the standard which the students must reach in order to secure a certificate of proficiency. In future three evening terms will be required to complete the full course instead of one as heretofore. By this change it is hoped that those who take any of the evening courses will acquire a knowledge and proficiency at their chosen trade equal to that reached by those who take the day course, so that the certificates issued by the school will be awarded only to those scholars who are equally well informed and skillful.

The evening courses in which readers of *The Metal Worker* are most interested are those in plumbing, cornice and skylight making and the new course in wood pattern making. The day classes in plumbing and cor-

nic and skylight making open December 9. The day class in steam and hot water fitting opens on January 6.

Graduates of the New York Trade School have fully demonstrated their value in the various trades in which instruction is given at the institution, and each year finds at the close of the season, which this year will be April 9, 1902, tradesmen seeking to secure the services of some of the graduates. This is a tribute to the skill in handicraft and the thorough grasp of principles of their trades which the students acquire under the guidance of their instructors and through the lectures given by the superintendents of classes.

No one would have found greater pleasure than the late Colonel Anchmuty, the founder of the institution, in the facts that, on reaching its twenty-first year, the growth of the school has demanded a new office building, that a capacious reading room is to be provided for the pupils, and that the trustees have decided to require a higher standard of proficiency from those pupils who secure the graduating certificates. These evidences of its usefulness and progressive spirit are sufficient honor for the institution on attaining its majority. They hold the promise of a long career of broader usefulness.

Already applications for membership in the different classes are being made by young men visiting the school, and also by letter. Applications will be received until the opening day, October 14. Those who contemplate entering the classes will do well to secure a copy of the catalogue and to file their application at the earliest possible moment, as on several occasions in former years more applications have been received than the school could accommodate.

THE CONSOLIDATION OF HARDWARE JOBBING INTERESTS.

The question of consolidation among the jobbing trade continues to be a topic of engrossing interest among manufacturers and merchants. It is known that efforts in this direction are being made, and some of the facts in regard to the matter are coming to light, but in the main the whole thing is invested with an air of uncertainty and mystery which permits a great deal of conjecture in regard to the actual features of the scheme. There is also much discussion over the question as to the feasibility of any such project. Notwithstanding the fact that some men of prominence and ability are supposed to be active in the consolidation enterprise, the general feeling expressed by men whose judgment is entitled to weight is that an attempt to bring the jobbing trade together into a huge organization in any way that would give reasonable promise of successful operation is quite impracticable, and the project, as referred to in most of the public statements in regard to it, is characterized as visionary.

Whatever may be the outcome of the effort, the attention of the trade is thus brought to the fact that something in the way of consolidating jobbing interests is perhaps feasible. That there are an unnecessary number of jobbing houses is conceded, and the competition between them is such as to make it a difficult matter, under existing methods of distributing hardware, for them to realize anything beyond moderate profits, and in order to do this they must be given very efficient management. Even then the general course of the market has much to do with their success, which depends in too large a measure upon whether goods in their hands rise or fall in price. It is, however, exceedingly doubtful if anything in the way of consolidation is going to seriously diminish such competition. There is, perhaps, no reason why some of the competing houses should not join forces, and thus, perhaps, gain something in the way of economy and improved position. But in all this it must be remembered that no organization or artificial arrangement of any kind can be relied upon to make success in business. With the jobbing trade, as with every manufacturing and mercantile interest, the prime requisite is ability in management, which recognizes existing conditions and takes advantage of them with adequate skill and energy.—*The Iron Age*.

W. M. Shaddinger.

Washington McLean Shaddinger, who for many years was prominently identified with the Western stove trade, died in Chicago, September 20, aged 49 years. Mr. Shaddinger was born in Cincinnati, his father at the time being one of the proprietors of the Cincinnati *Enquirer*. He was named after the famous Washington McLean, then the editor of the *Enquirer*. He was engaged in the stove business for practically all of his adult life. His first connection was with N. Patterson & Co., and he was next in the employ of Redway & Burton, both of Cincinnati. Mr. Shaddinger then became connected with Fuller, Warren & Co. of Troy, N. Y., holding the position of assistant manager of their Chicago branch. Purchasing an interest in the Detroit Stove Works of Detroit, Mich., he was elected second vice-president of that company. In 1897 he was compelled to retire from active business on account of his health, which he never completely recovered, his death occurring from a complication of diseases. The remains were taken to Cincinnati, the interment occurring on the 22d. At the interment one of his old employers, S. R. Burton, was present, as well as Lazard Kahn of Hamilton, Ohio, they being the only representatives of the stove trade at the funeral. Mr. Shaddinger was a man of such wide acquaintance and was so highly regarded by his old associates in the stove trade that undoubtedly a large delegation would have participated in the last sad rites if information had been given them of his death. He was married while living in Detroit, and leaves a widow and daughter.

The Æolipyle Combustion Governor.

With a view to lending all assistance possible to those who sell heating apparatus and renew the smoke pipes to that already in use, the Æolipyle Company, 237 Water street, New York, are furnishing literature especially adapted for selling the Æolipyle combustion governors. One pamphlet, of 22 pages, is devoted entirely to testimonials from heating engineers, architects and the trade generally on the results that have attended the connection of an Æolipyle combustion governor with apparatus under their notice. Another pamphlet contains a price-list, pictures of the governor, and the method of attaching it to an apparatus, with a full explanation of how to operate it to maintain a uniform temperature in a building while accomplishing a saving in the fuel consumed. One cover of this little pamphlet is perforated along one edge, bearing on one side the address of the company and a space for the mailing stamp; on the other side there is room to make an appointment with a salesman, write a request for a full catalogue, order an Æolipyle, or request an examination of an apparatus, with a view to applying a combustion governor. Another convenient advertising device is a strip of paper 1¼ inches wide and 36 inches long, divided into ¼-inch spaces, and marked as a measuring tape. At various points are printed the prices of the different sizes of the Æolipyle Governor, and it is only necessary to run the paper around a smoke pipe in order to determine the price of a governor for the size of the pipe measured, whatever its size may be. The other side is divided into several sections containing text devoted to the advantages of the Æolipyle, among which is a statement that the United States Government is using 32 Æolipyle Governors on Government buildings at Fort Hamilton, New York Harbor.

CHARLES C. HEATH & Co., Baltimore, Md., are sending out a 16-page pamphlet calling attention to the merits of the National Furnace, which they manufacture in sizes adapted to meet varying requirements. The National is referred to as embodying the latest improvements, and in connection with the matter suggestions are given as to the proper method of setting a furnace. The company state that their 300 Series Furnace has a 20-inch steel radiator, high ash pit, strong, deep corrugated fire pot and sectionally revolving grate.

Andes Stoves and Ranges.

The illustrated catalogue for 1901, which has just been issued from the press by the Phillips & Clark Stove Company, Geneva, N. Y., is a very neatly printed volume of 132 pages, bound in maroon covers. In the early pages appears an excellent likeness of G. H. Phillips, together with a bird's-eye view of the company's plant. In their announcement to the trade, attention is called to the fact that all possible improvements in the company's products will be made as heretofore, and that the present high standard of Andes stoves and ranges, the result of over 50 years' experience in stove making, will be maintained. Within the past year they have originated many new patterns, so that the line presented within the covers of the catalogue is so complete that, as the company put it, "dealers in the Eastern and Middle States need not look elsewhere." The company's Eastern branch is located at Troy, N. Y., where a stock of ranges and repairs is always carried. For the benefit of the dealer some suggestions with regard to ordering repairs are given, together with terms and other matters likely to prove of interest.

The leading place in the catalogue is given to the Peerless Andes, a six-hole range of handsome exterior and embodying a new flue arrangement referred to by the manufacturers as a great improvement. The entire back of the oven is incased by the flue, so that the oven is thus in contact with more heating surface than is usually the case. The range is full size in every part; the castings are heavy, rich and massive, while the trimmings are chaste and appropriate. What is referred to as one of the best known of modern all cast iron French style ranges is the Monarch Andes, designed for using coal or wood and having six boiler holes in the top surface. It is made in 24 styles and sizes; has thoroughly ventilated oven, new improved concealed balanced springs, novel oven door latch, large hinged flue clean out, capacious reservoir and other features, which cannot fail to command the attention of the wide awake and enterprising dealer.

The cast stoves and ranges are represented by a varied assortment occupying something like 90 pages of the catalogue. The heating stoves are referred to as an assortment adapted to all sections of the country, some of which are for hard coal, some for soft coal, some for wood only, while others are arranged with combination of grates and fire pot linings to burn hard coal or soft coal, coke or wood. The leading place is given to the Art Andes, made as a single and double heater and having solid or sectional fire pot and duplex or draw center grate. Other heaters are the Revere, Crown, Mystic and Magic Andes, the Oak Andes in three styles; the Cottage Andes and the Rural Andes. The closing pages are devoted to price-lists, repairs, &c.

Catalogue of J. P. Lindemann & Sons.

A very comprehensive catalogue of attractive character, and comprising 100 pages, has just been issued by J. P. Lindemann & Sons, Milwaukee, Wis. The firm are Western representatives of the Co-operative Foundry Company of Rochester, N. Y., manufacturers of Red Cross stoves and ranges, and consequently a considerable portion of the publication is devoted to these stoves and ranges. The line is a very large one, comprising steel and cast ranges in great variety, cooking stoves, base burners, surface burning heaters adapted to all kinds of fuel, special stoves for soft coal, laundry stoves and hot air furnaces. The last half of the catalogue is filled with illustrations and list prices of the tinware, enameled ware and sheet metal goods manufactured by the firm. The assortment thus produced is a full line of sheet metal goods, including not only standard articles, but also the firm's own specialties, such as portable ovens for gasoline, gas and oil stoves. Lindemann ovens have a high standing in the trade, and not only comprise a great variety, but represent constructions suitable for every requirement. Several pages are devoted to oil stoves and sheet iron air tight.

Installing Furnace Plants in Old Houses.

BY M. L. KAISER.

The furnaceman is frequently called upon to estimate on placing heating apparatus in a house which has never had warm air partition flues, and no chimney available for smoke flue to the furnace except those to which the stoves were attached, and which probably do not extend to the cellar. Or perhaps the house was formerly warmed by fire place or Baltimore heaters, with slate mantel settings and solid brick or stone jambs in the cellar beneath.

In order to estimate intelligently on such work it will be necessary to plan the whole job in advance. To this end a plan of the house drawn to scale, and with the various doors in the proper locations, is a great convenience in locating the several partition flues or stacks. Such a plan is not absolutely indispensable, however, as the planning for stack locations may be done by measurement in the house itself. At any rate the householder will want to know "how you are going to do it," and will wish to be informed in advance how much replastering and repapering will need to be done, while the lady of the house will want to know how much dirt you are going to make and whether she must take up her carpets.

Unless these questions are answered promptly and satisfactorily the householder will invite Mr. Tongs, your competitor, to estimate on placing a steam or hot water heating plant, and have him tell how little dirt it will be necessary for him to make in installing his apparatus. Although you may be fully convinced that a good warm air job will be better for the house in question, it will avail you little unless you can give good and sufficient reasons for the faith which is in you. A confidence born of knowledge will go far toward allaying the fears of the prospective customer, and if he sees that you know much more about the subject than he does he will defer to your judgment in matters which may affect the efficiency of the apparatus.

OLD HOUSES CAN BE HEATED BY FURNACES.

At the outset of this paper the writer wishes to make the statement that there are few old houses containing up to ten rooms in which a perfect working furnace cannot be installed without marring plastering or papering and without removing the carpets. This statement is based on an experience covering houses of almost every description. If, however, warm air flues of sufficient size cannot otherwise be provided, there should be no hesitation in recommending and planning for flues of proper size in locations which will be the most feasible, and which will, when finished, mar the appearance of the room the least.

The loss of heat from a room by radiation and convection is governed by the material and construction of the walls, by the area of exposed wall and window surfaces, by the temperature of the adjoining rooms, by the difference in temperature between the outside air and the air in the room, and by the direction and velocity of the wind.

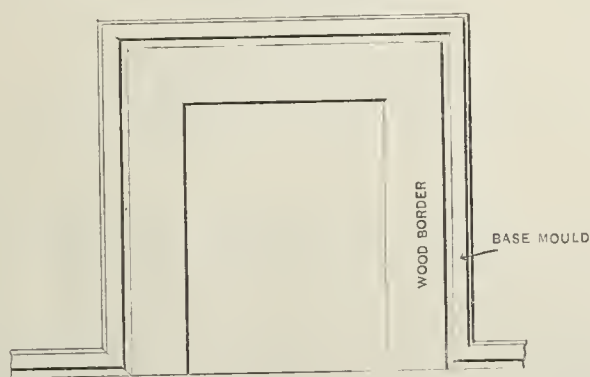
To provide for this loss and to maintain the air in the room at a constant temperature, it is necessary to introduce air at a temperature higher than the temperature desired in the room. The smaller the warm air flue or duct which carries this heated air, the greater must be the velocity and the higher the temperature of the air introduced to make up for these heat losses. A high temperature of the incoming air is undesirable, both from an hygienic and an economic point of view. The lower the temperature of the heated air the lower its velocity through the flue, and the greater must be the size of the flue and the volume supplied to replenish the loss of heat.

LARGE AIR FLUES NECESSARY.

Warm air flues of ample size should therefore be provided, and when a decision has been reached as to the proper size of warm air flue for a certain room nothing

less should be allowed to be substituted. Furnacemen should get rid of the fallacy that the warm air will be accelerated in passing an obstruction or through a constricted point in a warm air pipe or flue. The ordinary velocities of from 4 to $4\frac{1}{2}$ feet per second for first-floor flues and from 5 to $5\frac{1}{2}$ feet per second for second-floor flues means those velocities at the point of smallest area. The velocities apply for the ordinary working temperatures, and any increase in the velocity means an increase in the temperature to produce it.

It is evident, therefore, that with a velocity of 5 feet per second in a partition flue of 48 square inches area the velocity in the 9-inch round leader pipe of 64 square inches area will be a little less than 4 feet per second. If this same partition flue (of 48 square inches area) is restricted at any point so that the area is 36 square inches at the point of obstruction, then the velocity mentioned of 5 feet per second applies to the restricted point only, and the entire partition flue might as well be 36 square inches in area if friction is neglected. It should not be understood from this that the pipe should be of the same area from the furnace to the register, as the friction in the nearly horizontal leader pipe is greater



Installing Furnace Plants in Old Houses.—Fig. 1.—Method of Arranging for Side Wall Register.

than it is in the upright flue or stack. The power necessary to overcome friction is greater as the velocity increases. The horizontal pipes should therefore be one-quarter to one-third larger in area than the upright flue it supplies. If the difference is much more than this the loss from radiation from the increased pipe surface becomes so great as to offset the advantage derived from the increased area.

FLOOR REGISTERS.

The better way to provide the requisite area of warm air flues for the first floor is to place the register in the floor. The householder and his wife will sometimes refuse to consider the placing of floor registers, however, on account of the cutting of the carpets. The fact remains that by using a floor register the entire area of the leader pipe, whether it be 8 inches or 14 inches in diameter, may be made available, while the maximum available area with a partition flue placed in a house already built is reached at $4\frac{3}{4}$ x 12 inches for the first floor and $3\frac{3}{4}$ x 12 inches for the second floor. The objection that the floor register collects dust is also true of the wall register, as any one who has removed a wall register which has been in use can testify. The argument in its favor is that the floor register may be easily removed for cleaning, while the old people of the house will be quick to appreciate the advantage of being able to warm the feet over the floor register.

ARRANGING SIDE WALL REGISTERS.

To obtain the maximum area from $4\frac{3}{4}$ x 12 inches, or 57 square inches, for the first-floor partition flues, it is necessary to cut away the lath and plaster back of the baseboard, and let the asbestos covered tin pipe rest against the base board and finish with the finished wall surface. To make this effective there should be some means of so placing the register that it will not extend into the tin flue, as the flue would thereby be reduced in area just as surely as though the entire flue were the size of the space remaining. One way to accomplish this is to miter a 1 x 3 inch strip around the register

opening and nailed to the studding, with the bottom ends resting on the baseboard. The base mold may either be finished against the strip or mitered around it, as shown by Figs. 1 and 2. The face of the strip is flush with the base, and the register flanges rest against the strip at the top and sides and against the baseboard at the bottom. The edges of the strip under the register flanges should be covered with tin and asbestos. A convex register used in connection with this plan entirely obviates the obstruction of the flue by the register body.

One of the difficulties encountered is to find sufficient

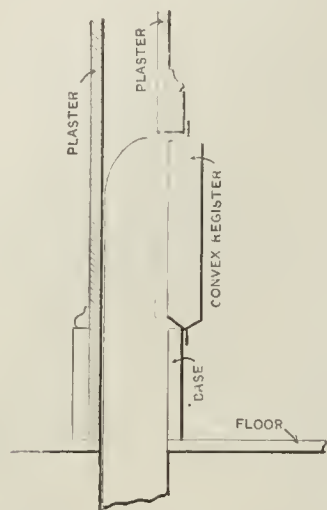


Fig. 2.—Side View of Side Wall Register Connection.

space between the partition studding to provide the requisite area of warm air flues to properly heat the upper floors. While the upper floors require the less area of flues, it is usually more difficult to reach each of the rooms without marring the walls. Then, too, the studding is often "staggered" over the cellar joists, and quite as often the second-floor studding is staggered over the first-floor joists. In the first case the cellar joists may be cut and supported by headers, and if the condition exists at the second floor studding the flues or stacks may be turned over between the joists, and finished with a register and border in the floor. Where it is found necessary to place a header in the cellar joists, the joist may be most easily cut from above by sawing through a seam in the flooring. The nail which is driven into the joist at each seam in the flooring may be driven back out of the way of the saw with a nail set. A little sawdust and putty will effectually fill the saw cut.

CUTTING WOOD WORK.

The cutting of the wood work should be done before the measurements are taken for the warm air flues or stacks, as it often develops, after part of the cutting is done, that on account of some obstruction, before unseen, the stack must be located elsewhere than at first planned. For this same reason the furnaceman should do his own wood cutting, as by so doing a great deal of time and much unnecessary wood cutting may be saved. There is no reason why the furnaceman should not possess a good kit of wood cutting tools, and keep them clean and sharp, too. There seems to be a general opinion that the tinner and furnaceman cannot keep edge tools sharp, and this opinion is too often supported by facts. Every self respecting mechanic, whether he be tinner, plumber or carpenter, should take pride in keeping all his tools clean and ready for immediate use.

Opening a way through the partitions for the stacks is by no means a pleasant job, but care and good judgment will go far toward softening the unpleasant features. A large piece of old carpet to work on should be used in this, as in succeeding operations. Before starting to cut the wood work for a second or third floor stack the joists and studding on both floors should be accurately located, to make reasonably sure that the way is clear from bottom to top. The floor and the 2 x 8 inch plate may then be cut out from between the studding from the

cellar, and the space probed with a pole to make sure that there are no diagonal braces in the way.

REMOVING PLASTER KEYS WITHOUT DUST.

The flooring may then be cut out on the second floor and the upper plate cut away from above. The space between the studding at the top should then be plugged with old newspapers and the key of the plaster scraped off with a scraper, drawing downward. If scraped by drawing downward the key of the plaster is broken off flush with the inner side of the lath. If scraped by pushing upward the key is often broken away from between the lath. The purpose of the newspaper plug is to prevent the draft of air from the cellar from carrying the dust into the room. If the plug is allowed to remain in the opening the subsequent cutting may be done with very little dust, while if the plug is removed the draft will carry the dust far into the room. The floors should be cut against the joists, and along the seam at the tongue and groove by using a gimlet bit and fine keyhole saw, so that the boards may be removed and replaced without splitting. The stack or flue should then be made straight and square, and pushed up from the cellar in two sections, taking care to solder the sections together as they are pushed up, so that they cannot come apart if it is found necessary to draw them back. The stack should, of course, be covered with asbestos, pasted on, before being placed in position. If found necessary to remove the baseboard in order to open a way for the register head, it will sometimes be found that both ends of the base are "gained in" at the corners of the room. The base should then be pried out in the middle first and sprung away from the wall until one of the ends is free. The nails, instead of being driven back pre-

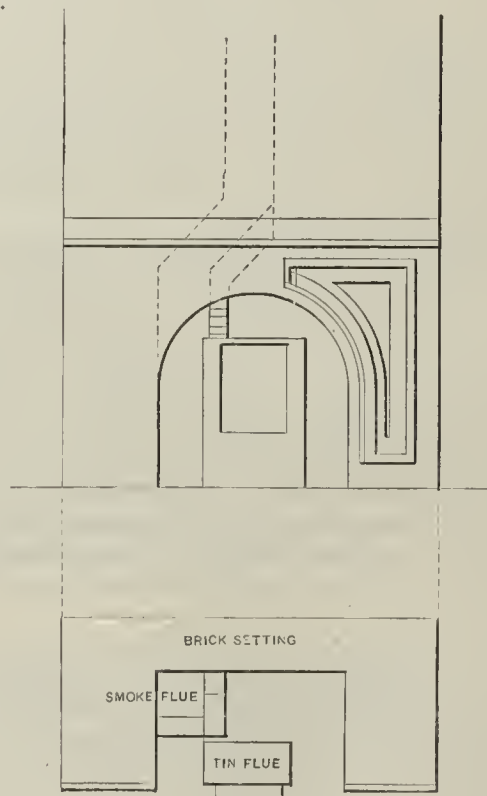


Fig. 3.—Plan and Elevation, Showing Smoke and Air Flue Substituted for Fire Place Heater.

paratory to replacing, should be broken off, so that the finish of the wood work will not be marred by splintering. Pieces of tin should be nailed around the stack in the cellar and above the ceiling, so that mice cannot use the openings as runways.

FIRE PLACE HEATERS REPLACED BY FURNACE.

If the house had formerly been heated by means of several Baltimore heaters, one of the settings may be used for the furnace smoke flue, and also for a register to the first floor room in which it stands. To accomplish this the brick hearth space between the jambs should be cut through and the 8 x 8 inch furnace flue built up from the cellar bottom against one of the jambs, leaving space enough in the center for the tin warm air flue, as in

Fig. 3. The front may then be tilted across or covered with an ornamental cast front. Where the Baltimore heater setting is not needed for a smoke flue, the tin warm air flue may be so arranged that two rooms on the second floor and one or two rooms on the first floor may be heated from it. The warm air flue at the bottom should, of course, equal in area the combined area of all its branches.

EXTENDING CHIMNEY.

It sometimes happens that the only chimney available for the furnace smoke flue rests on brackets in the dining room or sitting room, and extends only far enough below the first floor ceiling to receive the thimbles by which the heating stoves were formerly connected to it. In such a case the chimney may be extended to the cellar in the following manner: A short piece of 4 x 6 inch timber may be pushed through the pipe holes, with the ends projecting a short distance on either side of the chimney. Posts of 4 x 4 inch hemlock should then be

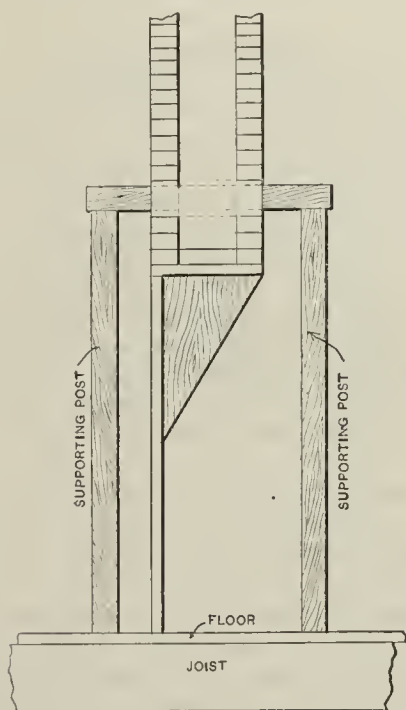


Fig. 4.—Method of Supporting Chimney While Building a Base.

wedged under each end of the short timber, the lower ends resting on the floor. Other posts should be placed in the cellar beneath these posts, to take the strain from the joists and flooring. The mason may then remove the brackets on which the chimney rests and start his chimney beneath it on the cellar bottom, first firmly bedding in the ground a thick flagstone about 8 inches larger in each dimension than the base of the chimney. The new chimney base may then be built up with cement mortar to meet the old chimney, building in at the proper heights the cast iron clean out frame and the galvanized smoke pipe thimble. The joint between the new and the old brick work should be firmly wedged with pieces of slate of the proper thickness. After allowing a few hours for the cement mortar to set, the props may be removed and the old smoke holes bricked shut. If carefully done it will be found that the old chimney has not settled a particle. See Fig. 4.

COLD AIR DUCT AND DAMPER.

It goes without saying that in such a plant as we are now contemplating the fresh air duct and furnace pit should be well constructed and of ample size to furnish all the pipes with a full supply of air. The duct should never be less than three-fourths of the combined capacities of the leader pipes, and the cut off valve should be so arranged that when the air is prevented from entering the furnace from the outside, it must enter by some other source of supply provided from inside the house. A tight damper which will close off the air duct completely or nearly so is an abomination and should not be tolerated. The furnace, too, should be considered as a ventilating as well as a heating apparatus, and

should be large enough to leave plenty of margin in the coldest weather. The air passages through the furnace should at least equal in area the combined areas of all the leader pipes. If the area of the air passages is much less than the area of the leader pipes some of the pipes will surely "go shy," while if the area of the air passage is greatly in excess of the areas of the leader pipes the air will pass through the furnace so slowly as to cause the casing to radiate considerable heat in the cellar. This is easily proved by shutting off a few registers while the furnace is well heated.

A RETURN DUCT.

If the house is pretty "leaky" and much exposed it is advisable to provide a return air duct with a register from the hall, and so provided with valves and levers that the same movement of the rod which shuts off the outside air supply will open the return air supply, and *vice versa*. The additional cost of such an arrangement is well invested, as it will enable the house to be quickly warmed in the early morning or in cold and windy weather. If the house is left locked up during the day the return air duct may be opened and the air circulated, thus providing a warm house with small fuel consumption. Although the house may be warmed at much less expensio by using the return duct, the householder should be warned that he is not getting the same results in ventilation as he would if he were using the fresh air duct. Heating by means of the return duct, however, is little worse than heating by direct steam or hot water radiation.

In conclusion it is well to remember what has been hinted at in the opening paragraphs, that such work as is met with in old houses must be estimated without the help of the architect's drawings and specifications, and there is, therefore, no architect on whom to place the responsibility. The furnaceman must do his own planning and must be responsible for the result. The effort should be to provide a first-class piece of work rather than to put in a cheap job. There are other arguments in favor of warm air heating as compared to steam and hot water heating besides the argument of lower price. Let the furnaceman educate himself first, and then educate his customers to the peculiar merits of his apparatus.

The ideas presented here are by no means exhaustive, but the purpose of this paper is accomplished if other ideas are hatched out by the inherent warmth of the subject.

Artistic Enameled Steel Ranges.

The Artistic Enameling Works, Ninth and Monroe streets, St. Louis, Mo., have prepared for distribution among the stove trade a little pamphlet in the interest of their Artistic enameled steel ranges. The text is written in an entertaining vein, and yet makes all the features of the range thoroughly understood. It is pointed out that the construction is such as to secure perfect operation; the oven is of ample size; the fire box equipment makes the care of the fire a simple matter; the high closet is capacious and well adapted for the use for which it is constructed, and the various parts of the range are enameled so that it can neither burn nor chip off, and moisture cannot penetrate it. Among the recommendations offered to the prospective buyer is the fact that no polishing of the range is required, consequently less dust is raised in the kitchen, and that the range can be kept clean and bright in appearance by scrubbing. Several comic pictures are presented, one showing a wife chasing her husband with a broom, because he refused to furnish her with an Artistic enameled steel range. In another the "lady help" is pictured saying, "I don't polish no range, mum," while in connection with a third a colored cook remarks that it "spoils her hands to be blacking them old-fashioned ranges." The last page of the catalogue shows a man in a happy state of satisfaction, due, it is said, to the fact of his meals being cooked on an Artistic enameled steel range. The company have an exhibit at the St. Louis Exposition, which is as thoroughly entertaining and attractive as this little catalogue which they are distributing.

Fire King Gas Heaters.

We show in the accompanying illustrations two forms of new Fire King gas heaters, which have been brought out this season by A. Weiskittel & Son of Baltimore, Md. The round heater, represented in Fig. 1 of the engravings, and known as the No. 1030 Special, is made with an ornamental cast iron top and base, with sheet iron



Fire King Gas Heaters.—Fig. 1.—General View of Round Heater.

drum. The burner is of the improved brass star pattern, the gas being taken into the center of the burner at the bottom. The tubing connection is on the stop cock, which passes through the base of the heater below the line of the burner so that the tubing is not affected by the heat, as is usually the case with gas heaters.

In Fig. 2 of the illustrations is represented what is known as the No. 124 Special radiator. This construc-

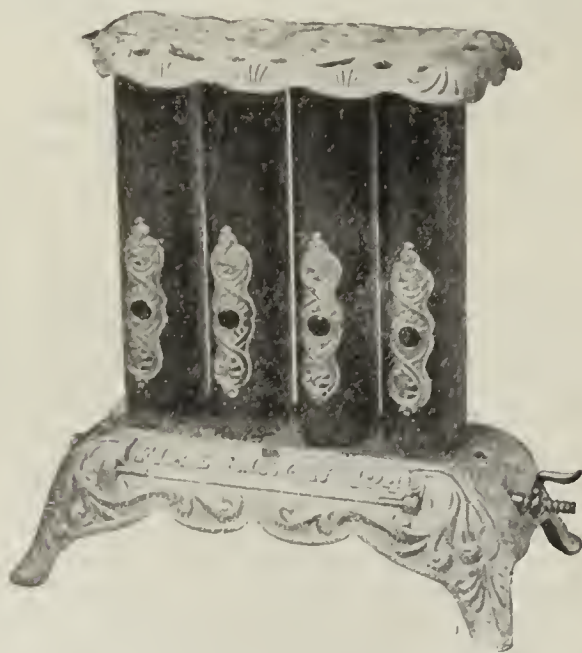


Fig. 2.—General View of Four-Tube Radiator.

tion is said to be of new design, has sheet iron columns set with jewels and Scotch tip burners. The manufacturers offer other styles of radiators having 6, 8 and 12 tubes, as well as a complete line of square and round gas heaters of every description.

FIRE of unknown origin damaged the plant of the Insurance Stove Company, on the Chesapeake & Ohio Railroad, between Fifteenth and Sixteenth streets, Covington, Ky., to the extent of \$2500 a few days ago.

Peninsular Stoves and Ranges.

A handsome catalogue and price-list is that which has been issued by the Peninsular Stove Company of Detroit, Mich., and which is known as No. 108. It is printed in colors showing, so far as possible, the nickel plated parts in contrast with the japanned and black iron surfaces of the stoves. In many instances the important constructive features are separately illustrated, while the descriptive text is of a character to render the construction and operation readily understood by the casual reader. The catalogue is oblong in shape, the size being such as to admit of the use of several illustrations to a page, instead of a single large one, as is often the case. The goods are offered under the generic name Peninsular and embrace styles and sizes adapted to meet requirements both large and small. The general makeup and arrangement shows a careful consideration of the requirements of the trade, and the volume as a whole is one which is likely to be preserved by all dealers into whose hands a copy may come.

ODD PLATES.

WE have received from J. H. Gluck, 218-222 North Gay street, Baltimore, Md., a package of circulars calling attention to the merits of some of the leading Cook Stoves and Heaters which he is prepared to furnish. Among these may be mentioned the Sterling Fortune, an attractive base burner and double heater; the Gluck Four-Hole Cook Stove, which is referred to as the culmination of 25 years of experience in the Stove business; the Orient Times, another four-hole cook, intended for using wood only; the Merry Bride, a handsome parlor heater made with direct draft or full revertible flue, and the Mars Single Heater, offered in a number of styles and sizes.

It is stated that negotiations have been completed by which the Pittsburgh Stove & Range Company of Pittsburgh, Pa., will centralize their various plants in Beaver Falls, Pa. We understand it is the intention of the company to locate the new works on College Hill, just north of the borough, the property consisting of a tract of 23 acres fronting on the Pennsylvania line. The new buildings are to be brick and steel with slate roofs and having a floor capacity of 17 acres. The contract to be entered into is said to provide that the Stove company will build the plant on the site, equip and operate it continuously for five years, or until it has paid their employees for 750,000 work days, and that the product of the concern will be manufactured in Beaver Falls exclusively. It is said that the plant is to be in operation within eight months.

THE GOBEILLE PATTERN COMPANY, Cleveland, Ohio, have issued a rather unique circular calling the attention of Stove manufacturers to the popularity of direct draft Heating Stoves, Hot Blasts, Cook Stoves, &c., which has been in evidence for the past few years, and which appears to be on the increase. The circular gives a list of some of the manufacturers who, the company state, have intrusted their ideas to them, and who have put on the market many successful Stoves for which the Gobeille Pattern Company made the designs and patterns. With regard to Steel Ranges they state they could fill a page with names of constructions from their designs and emphasize the fact that they take the crude idea and work it up into finished patterns. They also point out that they make no duplicate patterns.

THE RINGEN STOVE COMPANY, St. Louis, Mo., report a visit last week from C. Lehman of the Lehman Hardware & Implement Company of Newton, Kan., who placed an order with them for a carload of the well-known Quick Meal Ranges.

THE ROCHESTER RADIATOR COMPANY, Rochester, N. Y., are sending to the trade a circular and card well calculated to arouse interest in their Radiators for connection with the smoke pipes of stoves, furnaces and other heating apparatus. A legend on one side of the card reads: "This side is red and the other side we want read." On the other side are two pictures, one showing a tea kettle boiling on the top of a chimney, illustrating

the waste of heat, while the other depicts a young man sitting on the ridge of the roof holding his hand over the top of the chimney, showing how the waste of heat is prevented when the Rochester Radiator is used. In the pamphlet accompanying the card is a picture of the top of a chimney with dollar marks in red ink representing sparks of fire, and in the smoke the words "Here Goes $\frac{3}{4}$ " are printed. The pamphlet gives a thorough description of the construction and operation of the Rochester Radiator, and cuts show it in use connected with the smoke pipe of a stove on the first floor heating a chamber on the second floor.

C. W. BABCOCK, for the past 30 years with the late George Starrett, will be pleased to see his many friends and the trade generally at J. M. Litchfield's Mt. Penn Stove Works salesrooms, 105 Beekman street, New York, which is his headquarters now. Mr. Babcock is an expert on Stove Repairs of all kinds and will be glad to offer suggestions and impart information on intricate and generally unknown parts to the trade and others who are interested.

WE have received from the Economy Stove & Mfg. Company of Detroit, Mich., a 12-page pamphlet calling attention to the Real Economy Gas Range, for which strong claims are made. The design and construction are said to be entirely new, while the sizes manufactured are such as to meet requirements both large and small. The oven is lined with asbestos and has removable polished cast iron cake griddles fitted in the bottom. The fire is always visible and can be easily regulated from a standing position. The burners have drilled perforations, are removable for cleaning, and are so constructed as to produce, it is claimed, perfect combustion. The Stoves are made for both artificial and natural gas, those using the latter fuel being fitted with closed tops and solid covers, with an independent vent for each burner.

THE Western Stove trade continues very active. In fact, some of the managers of Chicago Stove houses go so far as to say that their business is "booming." This is a highly gratifying condition of trade, and it is earnestly hoped that it will keep up through the month.

THE MICHIGAN STOVE COMPANY are distributing a gorgeously illustrated publication entitled "What Others Think of Us," which contains a reproduction of articles printed some time since in *The Iron Age* relative to their foundry at Detroit and in the *Stoves and Hardware Reporter* relative to their Chicago branch house. Portraits of the officers of the company are given. The descriptive articles set forth the various processes involved in the manufacture of a Stove and the methods pursued in the management of the sales department. The book makes a handsome souvenir.

ON Saturday last, September 28, the Michigan Stove Company paid to their employees for 12 days' work the sum of \$27,754.64, being the largest sum ever paid out in wages by the concern during their existence. It is also believed to be the largest amount ever paid by any Stove concern in the world for a like number of days. The interesting statement is made by the Michigan Stove Company that the average cost of supplies reaches about the same sum as their pay roll.

It is stated that the Kelsey Furnace Company of Syracuse, N. Y., are about establishing a distributing depot in Nashua, N. H., in order to supply the Eastern territory. The company have secured a portion of the old bobbin shop on Charles street, where a stock of goods will be carried.

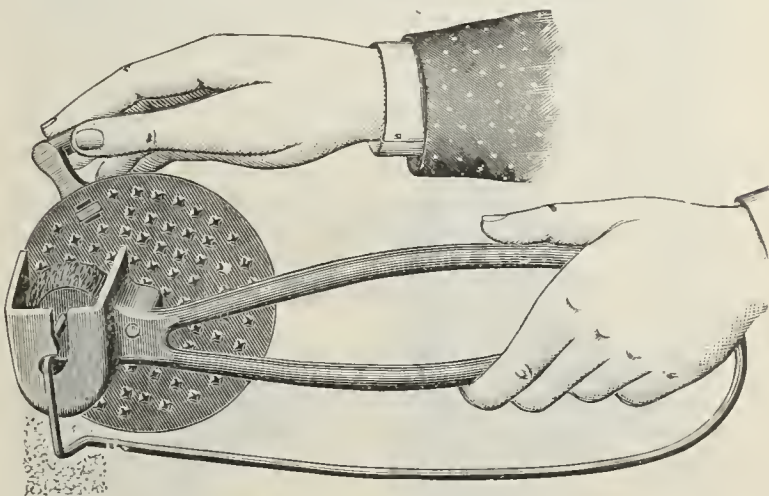
A RECENT ISSUE of the *Detroit Journal* contained a very interesting description of the plant of the Detroit Stove Works of that city, accompanied by illustrations of some of the various departments of Stove manufacture, together with general views of Jewel Ranges and Heaters. Stove manufacturing is one of Detroit's leading industries, and a description of the process of manufacturing always appears to be of interest.

THE ECONOMY STOVE & MFG. COMPANY of Detroit, Mich., have issued a 22-page pamphlet illustrating and describing the Economy Gas Heater, which they manufacture in many styles and sizes. All parts of the Stove which are exposed to the fire are of cast iron, as are

also the burners. The latter have an adjustable air mixer and are so arranged that they can be taken out through the bottom of the base for the purpose of cleaning without disturbing the filling or the basket grate. The Economy is fitted with a removable basket grate filled with patent incandescent fuel, which when lighted has the appearance of a hard coal fire. The Gas Heaters are made in 14 sizes and are referred to as being entirely new and up to date in all respects.

Family Rotary Nutmeg Grater.

The Specialty Mfg. Company, Lancaster, Pa., for whom Allerton-Clarke Company, 97 Chambers street, New York, are general selling agents, have just put on the market the Family rotary nutmeg grater, as here illustrated, which is improved in several respects as compared with the one formerly made. The grinding surface is made of heavier gauge metal and the support for the handle is also more substantial. The handle now, instead of being all wire, is cast metal, with a wire attachment fastened in the end of handle to keep the nutmeg continuously against the grinding surface until en-



Family Rotary Nutmeg Grater.

tirely used up. The whole device is tinned and made in a substantial manner, with a handle much more readily held than the former one.

Fuel Economizers

The stove trade will be interested in Catalogue J and a circular entitled "Why it Will Pay to Sell Burton's Fuel Economizer," issued by W. J. Burton & Co., 164 West Larned street, Detroit, Mich. The circular gives the prices, f.o.b. in Detroit, of the economizers to dealers and also to consumers, and a special concession to dealers when purchasing quantities. The printed matter enumerates the uses to which Burton's fuel economizer may be put and the advantages to be derived from it. By means of broken views the operation is readily understood. The catalogue shows the application of the economizer to smoke pipes of kitchen and parlor stoves, either for increasing the heat in the room in which the stove is set, or the temperature in the room above, when an economizer is placed there. It is claimed that it in no way affects the draft, but extracts the heat from the fuel to such an extent that roof fires and burning flues, are positively avoided. In construction the economizers are made of either polished or plain surfaced steel. They are attractive in form and neat in appearance through good workmanship. The weight is such that they can be readily removed from one room to another, and can easily be attached to the smoke pipe without the employment of a skilled mechanic. The stove dealer will find profit in studying their advantages and bringing their merits to the attention of his customers, as they are adapted for use in connection with wood and coal stoves, hot air furnaces and steam and hot water heaters.

A. J. MACDONALD has lately opened a store in Bainbridge, Ga., carrying a line embracing Hardware, Stoves, Agricultural Implements and Plumbing Supplies.

RETAIL STOVE DEALERS' AND SHEET METAL WORKERS' ASSOCIATION OF WILMINGTON, DEL.

Some time since reference was made in these columns to the fact that the firms engaged in the retail stove and sheet metal working trades in Wilmington, Del., were endeavoring to form an organization for the purposes of mutual trade protection. We have received from W. C. Johnson, of J. C. Johnson & Son of that city, who is chairman of the Committee of Correspondence, the following information respecting the Retail Stove Dealers and Sheet Metal Workers' Association of Wilmington, recently organized:

"The object of the organization is to secure united action upon matters of general interest to the trade affecting prices, charges for work and material, the bearing of wholesale dealers toward private consumers not in the trade, the relations of employees, and whatever else may prove helpful and protective, not alone to 'masters' in the trade, but to their customers and employees as well.

"Our membership includes, almost without exception, those conducting a stove and sheet metal trade in the city, and as the objects of the association are more clearly understood, it is expected that those few concerns not now included will join the organization. The beneficial effect of the organization is being already felt in an increased conviction of ability to maintain fair prices, in a more friendly feeling between its members, and in an interchange of information, which cannot fail to be helpful to all.

"The following motion has been adopted by the association:

Resolved. That the Retail Stove Dealers and Sheet Metal Workers' Association of Wilmington, Del., communicate with other associations of similar character throughout the United States in regard to the formation of an international organization for the benefit of the trade."

The officers of the association, elected at a recent meeting, are as follows:

President. Isaac S. Bullock.

Vice-president. Edward R. Davis.

Secretary. William J. McMahon.

Treasurer. George L. Stradley.

Stove and Hardware Dealers.

THE BENNETT HARDWARE COMPANY have opened a new store in Okmulgee, Ind. Ter. The line carried embraces Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods and Harness.

JAS. M. CAVANAUGH has lately established himself in the Hardware, Stove, Tinware, Farm Implement and Sporting Goods business in Kingman, Maine.

J. F. CHILES is successor to Chiles Bros. in the retail Hardware, Stove, Farm Implement and grocery business in Conway, Iowa. Mr. Chiles also conducts complete Harness and Tin shops.

McELROY & ZOLLINGER have succeeded McElroy & Lorenz, Vinton, Iowa, dealers in Hardware, Stoves, Tinware, Sporting Goods, &c.

B. N. TROUT has recently embarked in business at Juliette, Idaho, handling Shelf and Heavy Hardware, Stoves, &c.

LEIBSLE & TRUMBULL have succeeded H. F. Leibsle in the Hardware, Stove and grocery business in Conrad, Iowa.

S. A. A. WALKER has bought the Hardware, Stove and Tinware business in Gibbin, Neb., formerly conducted by L. J. Babcock.

BEARDSLEY HARDWARE COMPANY have succeeded Beardsley & Son, dealers in Hardware, Stoves, Farm Implements, &c. The members of the new firm are S. P. Beardsley, H. E. Beardsley and William Stuart. Their store has been enlarged and a stock of Buggies and Wagons added to the former line.

R. DOAK of Grenada, Miss., and T. W. Mackey of Wetumka, I. T., have formed a partnership under the style of Doak & Mackey, and will open up in the wholesale and retail business at Wetumka, I. T., about October 15. The new firm would be glad to receive catalogues and quotations from manufacturers of Hardware, Stoves, Tinware, Wooden Ware, Sporting Goods, &c.

F. B. CAMERON has commenced the sale of Shelf Hardware, Stoves and Builders' Materials at Lawton, Okla.

F. E. MYERS & Bro., Ashland, Ohio, in a circular under date September 26, call attention to the different lines of their manufacture, including Hand and Wind Mill Pumps, Power Pumps, Working Heads and Tank Pumps, Spray Pumps and Auxiliaries, Hay and Grain Unloading Machinery and Myers' Stayon Door Hangers.

THE W. BINGHAM COMPANY, Cleveland, Ohio, issue an attractively printed little book of 64 pages, which is referred to as not a catalogue, but intended more as a suggestion of what the company have to show the trade in their remodeled House Furnishing department, occupying the second floor of their establishment. Special attention is invited to their fine line of Cooking Utensils.

J. F. WATSON, Houston, Mo., has admitted his son to partnership, under the style of J. F. Watson & Son. The firm handle Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements.

J. B. HARRISON has purchased the business of O. P. Cozatt, Afton, I. T., dealer in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c., and will continue at the old stand.

C. H. BELL & Co. will shortly succeed the John Anderson Company, at Portland, Conn., conducting a Stove, Furnace and Plumbing business, and would be glad to receive catalogues from manufacturers of these line of goods.

THE store in the Elliott Block, Keene, N. H., formerly occupied by the Spencer Hardware Company, is being improved and refitted by Pearson Brothers, who will add a general line of Hardware to their Plumbing and Stove business.

THE STANDARD STAMPING COMPANY of St. Louis, Mo., have increased their capital stock from \$250,000 to \$400,000. The company have just completed a large and commodious five-story warehouse and storeroom, at 2000 to 2006 North Broadway, adjoining their present factory plant on the west. The general offices and salesroom will be located in this building within the next two weeks, it being the intention of the company to vacate their present store rooms at that time.

The Malleable Iron Fittings Company.

The Malleable Iron Fittings Company, Branford, Conn., have just completed and put in operation a large addition to their galvanizing and tinning department, which more than doubles the capacity of the plant. This is the second addition to that department in the last two years, in which time their custom galvanizing and tinning business has rapidly increased, as well as their output of galvanized malleable iron fittings. Being extensive manufacturers of malleable steel and semi-steel castings, and with a well equipped machine shop in connection with modern galvanizing, tinning, coppering and japanning departments, they are able to make arrangements to furnish castings, either malleable or gray, finished in any way and in any quantity. Their galvanizing department now has a capacity of more than 12 tons daily, and they give special attention to tinning common cast iron, using the well known W. T. Flanders' process, described in "Galvanizing and Tinning," a book published by David Williams Company, 232-238 William street, New York. They have acquired the patterns accumulated by W. T. Flanders in the last 15 years and used by him in building the many plants for galvanizing and tinning which he has undertaken, including those for his labor saving devices for pickling pipe and for preparing cast iron for tinning. They will furnish castings from them and will also furnish plans and estimates to those desiring to erect plants for themselves.

ANNUAL MEETING OF HEATING ENGINEERS.

At a meeting of the Board of Governors of the American Society of Heating and Ventilating Engineers, held at the office of the secretary, W. M. Mackay, in New York, on Friday, September 27, it was decided to hold the eighth annual meeting of the society at their headquarters at 12 West Thirty-first street, New York City, on Tuesday, Wednesday and Thursday, January 21, 22 and 23, 1902. A letter has been sent to the members announcing the date of the meeting and soliciting co-operation in making the meeting interesting and valuable to the profession.

The members are invited to prepare papers, or to suggest topics for discussion. It is pointed out that disappointment to members who cannot attend the annual meeting and disadvantage to the society have been felt in the past owing to the late date at which copies of papers were presented to the Committee on Publication, and members are urged to send in their papers earlier than heretofore. These copies should be in the hands of the secretary at least 30 days prior to the meeting. This allows the paper to be printed and distributed so that the members can read and be prepared to discuss it, also to give additional information regarding the subject treated, or to ask questions on points on which they differ. It is hoped that those members who favor the society by contributing papers will take the matter in hand early, so that the delay that has been a drawback to former meetings will be avoided at this meeting.

An announcement is also made that the ballot for a number of new members will be sent out this month. Members are advised that any candidate whom they intend proposing should fill out his application at once, in order that he may be elected in time to enjoy the full membership at the annual meeting.

A PLUMBER'S VIEWS ON PRINTING PRICES.

BY A READER.

If any one has a doubt on the subject, a little inquiry among grocers and dealers in other lines of goods will soon show him that the trade paper they regularly subscribe for furnishes them with the latest information regarding prices of all goods in their line. The idea that such publication is, or may be, anything but beneficial to him or his business has never entered the mind of any business man, except some members of the plumbing trade, who, by some process of reasoning unknown to the writer, have reached the conclusion that their business must be conducted along lines totally different from those followed in other trades. In other words, they refuse to believe that it is as necessary for the members of their craft to keep in touch with the market in which they buy as it is for dealers in other lines.

A little thought on the subject must convince any reasonable person that there is no item of news a trade paper can publish that is of more vital interest to the subscriber than the prevailing prices of goods handled by him. Many subscribers to trade papers never take time nor feel disposed to read anything they contain except the market quotations. These they make it a rule to read regularly, because it is to their interest to do so. And it is safe to say a large majority of subscribers to trade papers of every kind would discontinue the paper if it ceased to furnish them with accurate market reports.

The claim so frequently made that the publication of prices of plumbing goods will educate the masses to the kicking point is not borne out by the experience of those engaged in other lines. Ordinarily, people do not consult trade papers before buying goods of any kind. But even if they did it might be to the advantage of the plumber, for it is a question if his pathway would not be smoother if his patrons were to know more about the cost of plumbing supplies than they do. Every one who has had any experience in the trade knows that a general belief exists outside of the trade that the plumber derives a much larger margin of profit on materials than

he really does, and this belief is the cause of most of the disputes which arise over bills when presented.

But whether the plumber would be benefited or not in the event of his patrons being better posted, the fact is most apparent that it is desirable he himself should be well posted as to prices and not be compelled to rely on the traveling man, who, if so disposed, may quote a higher price than the condition of the market justifies. The traveling salesman, as a rule, is a good fellow and can generally be depended on to do the right thing. But it is to his interest to get as good a price as possible, and no one can blame him for doing so. Another fact to consider is that he is not always at hand when wanted for reference, while the paper is. It comes regularly and the prices it publishes are to be relied on, for the reason that it has no axe to grind. It only aims to be accurate.

Allen Automatic Air and Vacuum Valve.

Illustrations are herewith given of the Allen automatic air and vacuum valve, which has just been placed on the market by the Norwall Mfg. Company, 40 Dearborn street, Chicago. This valve is intended for either steam or hot water. Fig. 1 shows the valve open, and Fig. 2 shows it closed. It consists of a shell in which

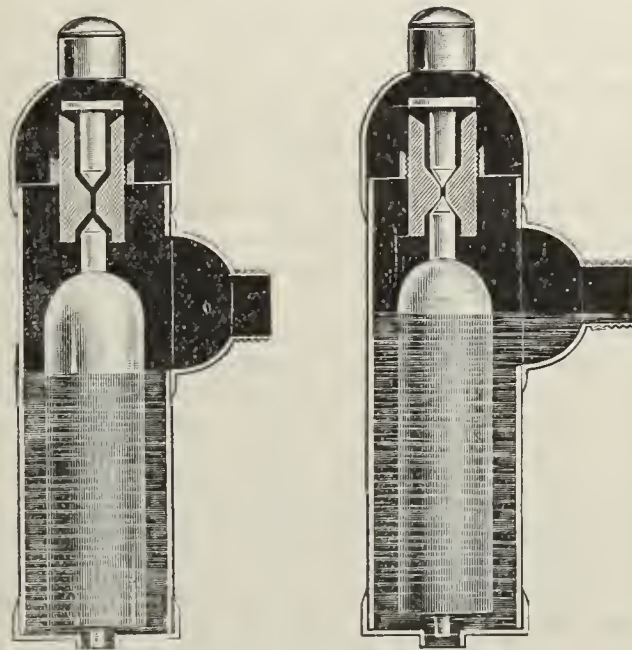


Fig. 1.—Open.

Fig. 2.—Closed.

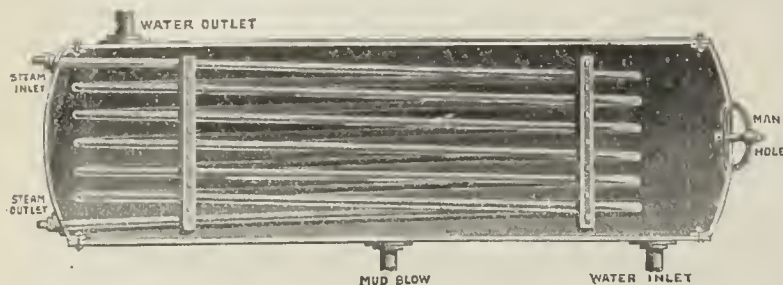
The Allen Automatic Air and Vacuum Valve.

the radiator outlet or inlet is so placed as to form a well in the lower half of the valve to receive and retain the condensation from the steam as it passes into or through the valve. A sealed copper float is placed in this well, and as the steam condenses the well gradually fills and the float ascends to its seat, effectually closing the valve. As the radiator cools when the steam goes down, or on closing the radiator valve, the surplus water in the well flows back into the radiator and the float drops. The pressure of the steam cuts no figure, the operation being the same with 1 pound or 50 pounds pressure.

The small loose pin in the top of the valve is the vacuum pin. As the radiator closes and the air seeks to enter the radiator to take the place of the condensing steam, the vacuum pressure causes the pin to seat itself and thus provides a positive automatic seal or check against air entering the radiator through the valve. This causes the radiator to cool much more slowly than it does with the ordinary air valve. When the radiator valve is again turned on or the steam is raised in the system, there being no air to expel none of the odor is noticeable, as in the case of radiators equipped with ordinary air valves, and besides the radiator heats almost instantly from end to end. The valve is specially valuable on radiators controlled by thermostatic radiator valves, as the slowness in cooling and quickness in heating add materially to the efficiency of the system.

The American Hot Water Heaters.

The custom of furnishing hot water to the tenants of hotels, apartment houses, office buildings and other institutions has led to the production of special apparatus for the purpose. The plant which generates steam for other purposes supplies either live or exhaust steam, which may be utilized for heating the water supply in connection with specially constructed water heaters. In Fig. 1 is shown the live steam water heater placed on the market by the Whitlock Coil Pipe Company of Hartford, Conn. It consists of a steel shell with two flanged heads riveted in place. For heating, a coil of seamless drawn copper tubing with brazed joints is used and rigidly fastened in position, being inserted through a



The American Hot Water Heaters.—Fig. 1.—Sectional View of Live Steam Heater.

suitable manhole provided in one head, while the ends of the coil pass through the other head. These live steam water heaters are made 18, 24, 30, 36 and 42 inches in diameter, and from 5 to 14 feet in length. The water connections and the steam connections vary from 1 to 2½ inches in diameter, according to the size of the heaters, which are rated to furnish from 150 to 2000 gallons of hot water per hour.

Fig. 2 shows the water heater when exhaust steam is used for the heating. These heaters are made in nine different sizes, varying in diameter. The diameters are 18, 24, 30, 36, 43 and 48 inches, the length varying from 5 to 10½ feet. In this heater the manhole is 11 x 13 inches in size and placed on the top side of the heater, while at one end there is a flanged steel head. At the other there is a double cast iron head, the inner head being drilled to receive the ends of the U shaped brass pipes, which are expanded into it. The use of the double head provides a chamber admitting of the use of steam supply pipes from 2 to 8 inches in diameter.

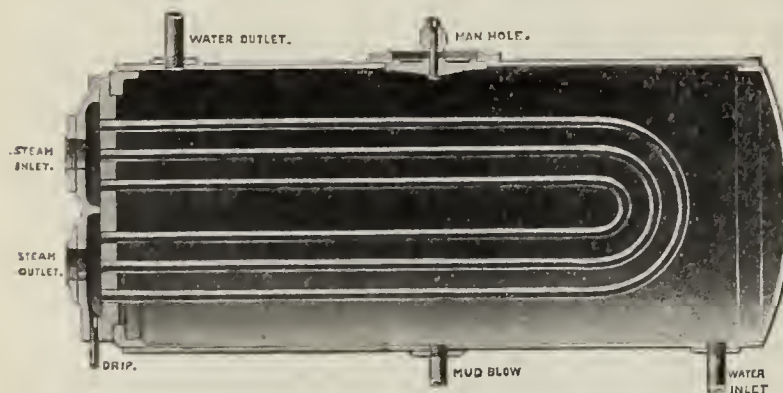


Fig. 2.—Sectional View of Exhaust Steam Heater.

These heaters are rated to furnish from 150 to 2000 gallons of hot water per hour.

In piping for hot water supply the company suggest that the main supply pipe should lead from the hot water outlet through the various parts of the building where hot water is to be supplied, and return either full size or reduced to the connection marked "mud blow." This makes a loop for providing a continuous circulation of water, so that hot water may be immediately drawn at any point. By the use of a tee and suitable valves this mud blow connection can be used both for a drain and a washout pipe. It is also recommended that a thermostatic regulator valve should be provided to regulate the steam supply in the live steam heater in order

to prevent the water from becoming too hot. Where economy is not a necessary feature such a device is not necessary in the exhaust steam heater. The company issue a catalogue devoted to these heaters giving full dimensions, particulars and prices.

Plumbing Regulations Criticised.

In a paper read by Wm. Paul Gerhard, C. E., before the annual meeting of the School for Health Officers, at Burlington, Vt., July 10, 1901, the plumbing regulations, held in the highest esteem by the plumbing trade, were subjected to the following criticisms. Greater interest will be given to them on account of the high opinion held of Mr. Gerhard as a sanitary engineer:

I have already had occasion to state that, in my judgment, even the most elaborate of plumbing rules are open to criticisms in many respects, and it might seem appropriate to close this paper by pointing out at least a few rules which, to my way of thinking, are disputed matters.

There is, first, the question whether or not the main house sewer should have a trap near the front wall of the house. It must be conceded that where the house pipes are known to be absolutely tight and are provided with plenty of ventilation to the roof it is better to omit the trap. This secures at least two advantages—namely, it does away with the tendency to stoppages in the trap, and it also offers the best possible solution of the difficult problem of how to ventilate the street sewer. It is of course necessary that the latter should be well planned, well constructed, well flushed and well cared for.

When a trap is used on a house sewer—and it does seem to be necessary in the case of foul street sewers or in the case of connections with cesspools—it becomes necessary to provide a fresh air pipe which enters the house sewer above the main trap, and which establishes a circulation of air throughout the entire house pipe system. The difficulty with the fresh air inlet lies in choosing a proper location for the same. This difficulty exists only in cases of city buildings, for in country towns and villages and for isolated country houses it is comparatively easy to select and provide a secluded place for the fresh air inlet at a sufficient distance from the house. In our cities we have for years been struggling with a sort of brick pit, or basin, placed near the curb, covered with a grating in which the fresh air pipe terminated. Practical experience demonstrated the utter failure of this device, and we have by no means found the best substitute for the same. In New York City, for instance, every house owner who builds or alters a house is at present compelled by the Building Department to use a new patented device which is not only very expensive but quite worthless.

Regarding the types of water closets which are permissible in houses I am by no means in entire accord with the plumbing regulations of most cities. In New York, for instance, iron water closets are absolutely prohibited by the rules, and yet I cannot imagine anything better, stronger or more adapted for factories, stables, railroad stations, schools, insane asylums, &c., than a good, well made iron flushing rim wash down or siphon jet closet in which the entire inside is well covered with porcelain white enamel.

Again, these rules prohibit the use of the so-called "long flushing rim hoppers" except in situations where the closet bowl holding the water would be exposed to freezing. As a matter of fact, I have had under personal observation for a great many years one of the best types of long flushing rim hoppers, and I must frankly say that, notwithstanding the fact that it lacks the advantage of a large volume of water in the bowl, it is, to my mind, one of the best closets of the present day. Of course it should be well used, and it should have a well regulated and plentiful flush.

The rules of many cities prohibit the use of automatic flushing cisterns for urinals, and require instead a flushing tank with a chain and pull device. We all know the great carelessness exhibited in the use of such fixtures and the negligence of the general public in flushing the same after use where the fixture is provided with a stop cock and a water supply pipe. While the rule appears

to be proper in cases where it is desired to limit the use of water or to stop reckless waste, I cannot see why an owner of an office building, for instance, who puts in a water meter on his service and is willing to pay the water bill in full, no matter how large, can be prevented from using such automatic flushing tanks.

Nearly all rules call for a separate trap under every plumbing fixture, the same to be placed as close to the outlet of the fixture as possible, and yet, in the case of a set of three or more washtubs, building departments have been known to object to a layout of the plumbing in which each of the tubs had a separate trap, which, according to my experience, is the best possible arrangement of such work. Again, in bathrooms of private houses, where there is a shower or needle bath alongside of a wash basin and no bathtub in the room, which certainly can mean but one thing, and that is that the occupant of said house or bathroom intends using the shower bath instead of a bathtub probably as frequently as if he had a tub, plans with such arrangement of fixtures have been rejected by the Municipal Building Department of New York City because each of the fixtures—namely, the basin and the shower bath, had a separate trap. Instead of this arrangement the Department required that the waste from the basin be run into the trap of the shower bath, “in order to keep it supplied with water,” yet by so doing a channel, or waste pipe, sometimes 8 or 10 feet in length and lined with slimy waste matters, is left untrapped and in full connection with the air of the room.

Where the rules permit the use of wrought iron for soil and waste pipes they require such pipe to be galvanized and exclude the use of asphalted wrought iron pipe, whereas, as a matter of fact, the asphalted pipe is much smoother on the inside than the common galvanized pipe, and asphalted properly done is probably a better protection against rust than the common method of galvanizing. Some rules I have seen permit the horizontal portion of the house drain to be asphalted wrought iron pipe, but insist upon the soil pipes being galvanized. It would be interesting to know the why and wherefore of such a rule!

Again, where wrought iron screw jointed systems are permitted the rules require recessed drainage fittings for the soil and waste pipes, but permit the use of ordinary steam fittings for vent pipes. It must be evident that if the recessed fitting has any value at all, it is just as desirable to use it for the vent pipes and particularly for the horizontal runs of the same.

The rules of most cities call for every building to have its sewer connection directly in front of the building. I well remember a case of this kind where there was no sewer at all in the avenue in front of the building, and where there was a private alley in the rear in which a sewer had been laid by the private owners abutting on said alley. When I filed my plans in the Department showing the house sewer to run to the rear to said private sewer, instead of to the front, where there was no sewer, my plans were promptly disapproved, and it required several hours' arguing on different days to convince the head of the Department that the sewer connection in the rear was just as good and certainly just as permissible as the additional outlay of money to which he wanted to subject the owner of the property by compelling him to build a private sewer in front of the house.

Other points in plumbing rules which were well meant when they were drawn have been unfortunately misunderstood and misinterpreted. Take for instance the rule requiring that every house sewer should be laid with an inclination of at least $\frac{1}{4}$ inch to the foot. This rule was intended to establish a minimum fall and it is quite obvious to any one who has at all studied hydraulics that the smaller the diameter of the pipe the greater its inclination should be, yet by common consent the majority of mechanics call this “ $\frac{1}{4}$ inch to the foot” the standard fall, simply because it is the minimum fall allowed by the Department, and I have in much of my work the greatest difficulty in securing the laying of the pipes at a larger fall where I think this would be desirable, the mechanics contending that the pipes have been laid at the standard $\frac{1}{4}$ -inch fall.

The rule which we find in nearly every plumbing reg-

ulation requiring the back venting of pipes—namely, that “branch vent pipes should be connected as near to the crown of the trap as possible,” is one which it would be well to omit entirely in the future, for it is not followed any longer in the case of earthen water closets and earthen slop sinks. Similarly in the case of basin and sink traps it is very seldom nowadays that one finds the branch vent applied to the crown of the trap, one reason being that this would require a coupling or washer joint at the back vent connection, which experience has shown to be unsafe. Therefore screw connections are prescribed by the rules, and while this manner of connection is all right, it does away with the branch venting of the crown of the trap; therefore, the above quoted rule should be abolished.

The intersection of the line of vent stacks into the adjoining soil or waste pipe, above the highest fixture, is now permitted by the majority of rules, and in New York City the only exception is “where there are fixtures on more than six floors.” The reason for this exception is somewhat obscure, and it would be decidedly more advantageous to carry all vent pipes separately through the roof, even if this does require an additional hole to be cut through the roof. Wherever the pipes are so arranged it is possible to make a successful peppermint test by pouring the peppermint into the soil or waste line, but where the vent intersects the same below the roof the peppermint test is in many cases a delusion and a snare, because some of the oil may flow through the vent into the bend of the trap, and thus come out into the room, apparently indicating a leak when really there may be none.

I have on some occasions found it necessary to disconnect certain fixtures, for instance, wash basins in the center of a house or in sleeping apartments, or else sinks in operating rooms of hospitals, from the soil or waste pipe system of the house, and where such disconnection is properly arranged it is, in my judgment, a perfectly safe and sanitary system, yet it seems almost impossible to get systems so arranged passed under the present rules of many departments.

One more instance of how even a good rule may fail to work properly.

All plumbing regulations now call for entire open plumbing work, and for tenement houses in particular the requirement is made in New York that sinks shall be left entirely open and the waste pipe and trap of said sinks are required to be of lead.” Now I am certainly as much as anybody in favor of open plumbing work, but in the case of tenement houses this rule is, from a practical point of view, a great mistake. The tenants of such quarters have at best a very limited space available, and it is natural for them to use every inch of space, even under the kitchen sink or washtub. They will store the coal scuttle or pails under the sink, and in a very short time the lead waste and lead trap are found dented or knocked flat, and the stoppage of the waste is the inevitable result; therefore, if the plumbing must be open the rule should call for either brass or iron traps and waste pipes and prohibit the use of lead pipes and traps.

“HOT AIR.” *

BY INSPIRED.

There's a tip at a season like this
That to furnacemen comes not amiss,
'Tis simply, take pains,
Use plenty of brains,
And business to you will be bliss.

To succeed in heating with air,
A rise must continue to where
The air is to go
With an easy flow:
So put up the pipes with great care.

If a lot of heat pipes you would feed,
To give plenty of fresh air take heed.
You'll find it's no feat
To drive up the heat
When the flues get the air that they need.

NATIONAL COMMITTEE OF THE CONFEDERATED SUPPLY ASSOCIATIONS.

With a full attendance the members of the National Committee of the Confederated Supply Associations held their annual meeting at the Arena, Thirty-first street and Broadway, New York, on Thursday of this week. The meeting lasted all day, routine business occupying a greater portion of the time. The Conference Resolutions were reaffirmed, and a special Committee of Five was appointed to consider the questions of difference arising between master plumbers and jobbers, in order that an adjustment may be more promptly reached. The following compose the

SPECIAL COMMITTEE.

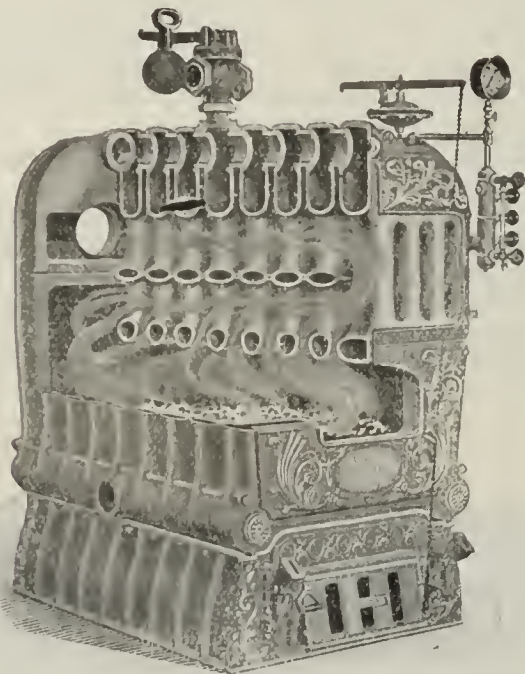
B. Frank Hooper,* chairman.
N. O. Nelson.
A. M. Maddock.
Frank J. Knox.
John F. Wolff.

On taking up the election of officers all of the old officers were re-elected. The officers for the ensuing year are as follows:

Chairman, Francis J. Torrance.
Vice-Chairman, Frank J. Knox.
Treasurer, B. Frank Hooper.
Secretary, Charles W. Woodward.

The Walker Boiler.

In the accompanying illustration is presented a broken view of the Walker boiler for steam and hot water heating, which is being put on the market by the



The Walker Boiler.

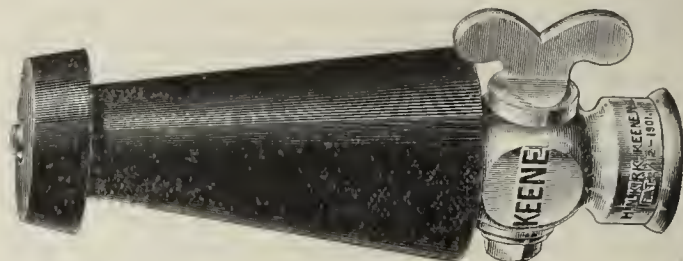
Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass. As will be seen, the boilers are of the vertical, sectional construction, embodying the return flue principle and the auxiliary crown sheet. By this means a larger surface is exposed to the direct action of the fire, and the long travel of the products of combustion utilizes their principal heat before they find exit to the smoke pipe. The sections are connected by means of a copper plated, malleable iron push nipple. The copper coating protects the nipples from corrosion, and also forms a slight yielding surface which helps to make up a tight joint.

The boilers are made in three series, numbered 15, 20 and 30, and in 19 sizes, ranging in capacity for carrying from 400 to 3650 square feet of direct hot water radiation, and from 240 to 2200 square feet of steam radiation. The boilers of the different series have grates 17, 22 and 31 and 32 inches wide, respectively, the length of the fire chamber varying with the number of sections

used. The fire box portion is so arranged that, if need be, a fire from 14 to 16 inches deep can be carried to insure a good fire throughout the night. In the 15 and 20 series triangular grates are used. In the 30 series, either triangular or rocking grates are furnished. The company state that they have been making boilers for over 30 years, and that this is the best boiler they have ever offered. A catalogue, which gives full dimensions and detailed explanation, with price-lists, has been prepared for distribution among the trade.

The Keene Combination Hose Pipe.

Those who sell hose pipe fittings will find in the Keene combination hose pipe, put on the market by H. N. Kirk of Keene, N. H., a device adapted for different



The Keene Combination Hose Pipe.—Fig. 1.—General View.

uses. It consists of a brass branch pipe threaded at one end for connection with ordinary garden hose having a stop cock and a hose nozzle and, as shown in Fig. 1, with a rubber sink flusher and collar adapted for removing the stoppage from waste pipes. The stop cock is so made that by turning it a solid stream or a spray may be thrown at will. Fig. 2 shows the application for removing the stoppage from a waste pipe, whether it be near a trap or some distance below it. It is only necessary to attach the flusher to the branch pipe and screw the branch pipe to the hose, connecting the other end of the hose with the cold water hose bib. The illustration shows a stoppage in the pipe at the point B, the sink partially filled with water, and a flusher inserted in the waste pipe at the point A. In use, the water supply

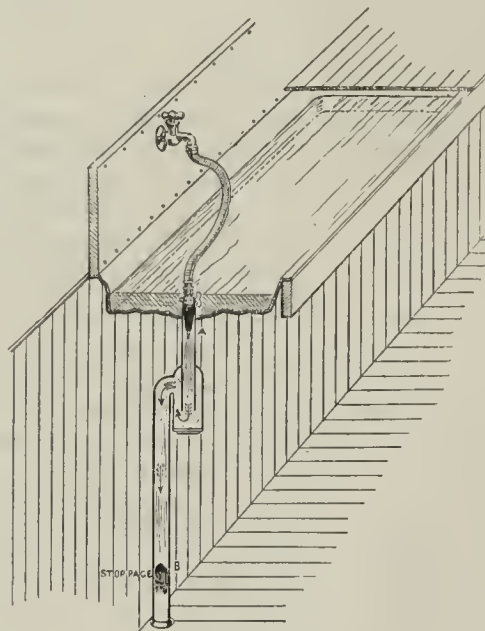


Fig. 2.—Method of Application.

should be turned on slowly so as not to make any severe shock on the thin waste pipe, otherwise it might be burst. It is pointed out that by careful use it will not only remove stoppage in the waste pipe near the fixtures, but also at some distance from them. Two sizes of collars are furnished, the smaller size being adapted for wash basins and bathtubs.

W. A. Dow, Sionx Falls, S. D., has just completed the installation of plumbing and heating systems in the Emerson Block in that city.

PROTECTION FOR JOBBERS OF PLUMBERS' SUPPLIES.

Much annoyance has been experienced by both the plumbers and dealers in plumbers' supplies through the erratic methods and quotations of some houses that have engaged in the wholesale plumbing trade without proper knowledge of the details of the business, the quality of goods and the customs of the trade. These concerns, where their methods have not caused demoralization in the prices and customs, have brought about an immense amount of trouble in the way of explanation and in refusal to follow the usual methods of old established houses. In order to eradicate this evil, the jobbers of New England have sent the following letter to the manufacturers and larger jobbers of plumbing supplies:

"The undersigned, jobbers of plumbing supplies, have agreed to purchase material only from manufacturers who confine their business to jobbing houses recognized by the National Committee of the Confederated Supply Association, and whose names appear on the list issued by said association."

It is signed by the following houses: Dalton-Ingersoll Company, Thomas Hoey Supply & Mfg. Company, F. W. Webb Mfg. Company, Joseph H. Young, Phillips Lead & Supply Company, the Dececo Company, Brown & Wales, E. F. Butler & Co., the William H. Gallison Company, James Barrett Mfg. Company, Louis Bourneuf & Co., Locke, Stevens & Co., the George Woodman Company, the Sumner & Goodwin Company, George E. Gilchrist Company, W. B. Hubbard & Sons and R. Estabrook's Sons.

Those who have applied and have had their names added to the list mentioned all agree that, while it has been necessary to satisfy the association of their knowledge and qualification to conduct a plumbing supply business, the capital employed and the stock to be carried, no unreasonable demand is involved and none of the information required is other than would be prompted by sound business principles, nor could it be objected to by the safe business man.

A BOWLING LEAGUE IN THE METROPOLITAN SUPPLY TRADE.

Through the efforts of Rollin C. Wilson, a meeting was held on September 19, at which the Plumbing and Steam Supply League was organized to participate in a bowling tournament, which will be held during the winter. The following officers were elected:

President, E. E. Haff.

Vice-President, G. G. Beach.

Secretary, Rollin C. Wilson.

Treasurer, W. C. Hallett.

Board of Managers: Harry M. Smith, J. S. Dibley, W. T. Gilmour, Albert Baerenklau and W. M. Murray.

The games will be bowled at the Monarch Palace Alleys at Twenty-sixth street and Sixth avenue, New York, on Monday and Thursday evenings of each week. Fifteen teams composed of representatives of the following supply houses have entered the league: Central Foundry Company, C. S. Locke & Smith, Behrer & Co., John A. Murray, Fred Adey & Co., Thomas G. Knight, H. P. Read Lead Works, John Simmons Company, Ronalds & Johnson Company, New York; Ronalds & Johnson Company, Brooklyn; Dimock & Fink Company, Crane Company, E. F. Keating, F. N. Du Bois Company, and a team composed of the following representatives: Rollin C. Wilson, James F. Conran of the Standard Sanitary Mfg. Company, W. H. Skirm and F. B. Miller of the Trenton Potteries Company, G. C. Ainsley of Chambers & Ainsley, Frank Wallace of the Henry McShane Mfg. Company, H. B. Olmstead of H. B. Olmstead & Co. and O. Chan Wells.

Cash prizes to the amount of \$117 have been arranged, seven for the teams, one for high team score and five individual prizes. The *Plumber and Fitter* has donated the greatest improvement prize, a pair of diamond cuff buttons. W. S. Emery has donated the least error prize, a pair of gold mounted opera glasses. The Trenton

Potteries Company have presented the league with a handsomely printed and bound pocketbook containing the schedule of the games and blanks for keeping a complete record of the team and individual scores and averages.

The tournament was opened on Thursday night in the presence of more than 100 enthusiastic representatives of the plumbing and steam supply trade. President Haff made an entertaining address explaining the working of the league and heartily commending this development of the social side of the trade. He then delegated to Secretary Wilson the honor of bowling the first ball for the league and, in modest appreciation of the favor, he satisfied himself with sending two pins to the pit. The schedule for the evening, on completion, found Behrer & Co. winning a game each from the Central Foundry Company and C. S. Locke & Smith, while C. S. Locke & Smith won one from the Central Foundry Company, the latter team losing two games. The highest score for the evening was 154, made by Arnold Behrer, the team score being 677. Nobody was so unfortunate as to make less than 100, and all were well pleased with the inauguration of the league.

The Wrought Iron Pipe Situation.

The ending of the recent labor troubles in the various plants of the United States Steel Corporation came as a welcome relief to the steam and hot water heating contractors. Had it not been for the ending of the strike last month considerable hardship would now be felt by those in the trade who have unfinished work on hand, and to whom the nondelivery of pipe meant loss of money through the enforcement of forfeits by owners and builders for whom the work is to be done. From all accounts, it will be long after the opening of the new year before the orders now in the hands of the pipe manufacturers will be completed, and this, too, despite the fact that the mills have been refusing orders since July. The demand for pipe has increased during the past week, and the prospects are that it will be greater as the cold weather sets in, and builders insist upon the completion of all heating work now under way.

New York City Notes.

The many friends of Thomas F. Gaynor of the National Executive Committee sympathize with him in the loss of his son, Thomas F. Gaynor, Jr., who was killed by a trolley car on September 28 while returning home from his father's shop. Young Gaynor was a fine, manly boy, about 14 years of age. His funeral services, which were held at St. Ignatius Loyola's Church on Tuesday, were attended by many representatives of the plumbing trade in the city.

* * *

E. J. McCabe, who was foreman for Byrne & Murphy on many of their large operations, has formed a partnership with J. F. Taylor, also from the shop of Byrne & Murphy. Under the name of E. J. McCabe & Co. they have opened a large and commodious shop at 862 Park avenue.

* * *

Among the large jobs now being done around town are the following: John Koch of 145 Sixth avenue, has the plumbing in the new church of St. Rose of Lima, on Cannon near Grand streets. T. J. Byrne of Fourth avenue, is well along in the extension to the German Hospital, at Seventy-sixth street and Lexington avenue. Geo. A. Pace has the plumbing of additional two stories that are being added to an apartment house at Madison avenue and Seventy-seventh street. Lasette & Murphy of Broadway are very busy with a large apartment house at Ninety-third street and Riverside Drive. De Graw & Cully have a large 12-story apartment hotel on Thirty-fifth street, between Broadway and Sixth avenue. Wm. Boss has just finished an apartment house at Broadway and Ninety-third street. Harry Spencer is well on with a seven-story apartment house at Ninety-seventh street, east of Riverside Drive; and

Black Bros. of St. Nicholas avenue have just finished a complete overhauling of the Hotel Cecil, St. Nicholas avenue and 118th street.

* * *

Withers & Stuckey of 786 Third avenue have been in hard luck lately. Last week their shop was broken into and about \$150 worth of brass and lead were stolen, and last Tuesday the building was set on fire. The blaze was fortunately put out with but little damage.

* * *

President Wallace of the Department of Buildings appeared before the Municipal Assembly last week in support of an addition to Article 150 of the Building Code providing for additional penalties for violations of the code, making the same a misdemeanor, punishable by fine or imprisonment, and including in the same "any architect, builder, plumber, carpenter or mason." Mr. Wallace said he wanted to protect those builders and mechanics who do good work from those who do not. The amendment was finally passed, making the builder responsible.

Heating and Plumbing Notes.

J. M. MARSHALL, assistant quartermaster-general at Jeffersonville, Ind., will receive bids until October 16 for plumbing the Central Office Building at the Jeffersonville Depot.

PLUMBING INSPECTOR HARRY THOMPSON, William Robinson and William Vanderveer of the Board of Plumbing Examiners of Grand Rapids, Mich., are preparing a series of examination questions for use in examining plumbers for licenses under the State law. The time allotted for the examination expires December 1.

THE BACKUS WATER MOTOR COMPANY, 178 Pennsylvania avenue, Newark, N. J., are sending to the trade a 36-page catalogue devoted to the Backus Water Motor, which is made in varying capacities, from $\frac{1}{8}$ to 10 horsepower, suitable for driving all kinds of light machinery, such as sewing machines, coffee and drug mills, church organs, ventilating fans and simple manufacturing machinery. The text gives a complete explanation of the construction and operation, and a variety of testimonial letters show the various uses to which the Motors have been successfully put. The cuts illustrate the application of the Motors to the machinery of printing offices, church organs, sewing machines in the ordinary residence and ice cream freezers. It is pointed out that they are well adapted for driving the pipe cutting and threading machinery of steam and gas fitters. The text also explains the capacity of the different sized Motors under varying water pressures. It is accompanied by a complete price-list. The last pages are devoted to a variety of Exhaust and Blowing Fans and Ventilating Fans made by the company.

THE MACKIN-KELSEY HEATING COMPANY, Philadelphia, Pa., have taken out city permits to install heating plants at 1805 Spring Garden street, 162 West Penn street, Germantown; 1724 Pine street, 1827 Walnut street, 115 South Twenty-first street and in a church and nursery school at Wayne and Harvey streets, Germantown, all in the city of Philadelphia, to cost in the aggregate \$4600.

WILLIAM KAISER & SON, Wilkes-Barre, Pa., report that they are very busy with large heating work, and are installing in one large brownstone residence, exposed on all sides, two Kelsey Warm Air Generators in a battery, with what is known as the twin connection.

SANDERS BROTHERS & JACOBSON, Sioux Falls, S. D., inform us that they have the contract for the plumbing and heating of the W. A. Lord properties, consisting of the Cascade Block and Temple Court on Main avenue and the Bell Block on Ninth street, Sioux Falls.

WILLIAM N. TOBIN, Syracuse, N. Y., has secured a \$15,000 contract for heating and plumbing the new hotel in course of erection at Gloversville, N. Y. Mr. Tobin also has a contract for heating and plumbing a large modern summer hotel at Long Lake in the Adirondacks.

CHARLES MCGOVERN, Sioux Falls, S. D., has the contract for installing the plumbing in two new tenements that are being erected in that city by Senator Klitteridge.

CAPTAIN D. E. MCCARTHY, quartermaster at Fort Leavenworth, Kan., will receive bids until October 26 for plumbing, heating and electric wiring 13 buildings, including barracks for the men and officers' quarters.

THE Master Plumbers' Association of Syracuse, N. Y., has sued one of its members for failure to pay his dues and fines.

THE UNIONTOWN ACME RADIATOR COMPANY, Uniontown, Pa., have received bids and are arranging for the erection of a foundry building, 120 x 200 feet; machine shop, 50 x 200 feet; cupola house, 25 x 38 feet, and sand shed, 25 x 152 feet. All of the buildings will be of brick and steel construction.

E. W. BLATCHFORD & Co., Chicago, Ill., are erecting a \$100,000 warehouse on the site of the old shot tower on Fulton street.

INGLIS & WORKMAN, Grand Rapids, Mich., have been awarded the contract for plumbing a new hotel in that city, which calls for the equipment of 50 bathrooms. Every room in the house, numbering over 100, will also have a lavatory. The contract will amount to more than \$6000.

THE SOUTH CHESTER PIPE & TUBE COMPANY of Chester, Pa., are contemplating the erection of a large rolling mill in connection with their Pipe and Tube plant. The structure, which will be of large dimensions, will be of brick and iron and will be located at the eastern end of the present Tube works and adjoining the plant of the Tidewater Steel Company. It will be used to furnish the material for the Tube mill. Building operations will be commenced as soon as plans are completed.

THE constructing quartermaster at Delaware City, Del., will receive bids until October 15 for the plumbing and electric wiring and pumping machinery at Fort Du Pont, Del.

E. WALTHER of the Walther Plumbing & Heating Company, Washington, Iowa, advises us that his city has voted in favor of an issue of bonds, for the purpose of erecting an electric light plant with all the necessary apparatus, to cost not more than \$17,500.

BLAKE & ANDROS, 28 Portland street, Boston, Mass., manufacturers of the Crescent Hot Water and Steam Heaters and the B. & A. Combination Union Elbow Valves for hot water, advise us that they are enjoying an excellent trade in their specialties. The firm point out that their Valves have been thoroughly tested, and thousands of these fittings are now in use throughout the country. They invite the trade to write to them for a copy of their booklet "A," which tells all about the B. & A. Valves.

THE theater on the Ocean Pier at Atlantic City, N. J., is to be inclosed and equipped with a steam heating plant, so that it can be run as a place of amusement throughout the winter.

THE work of pushing the erection of the House of Detention for Unfortunate and Criminal Children, at Albany, N. Y., is being advanced. The contract for a hot water heating plant has been awarded to Ridgway & Tyler at their bid of \$2765, while the plumbing contract has been secured by H. H. Rusk & Co. The roofing contract has been awarded to James Ackroyd for \$1024.

J. W. CUFF & Co., heating and ventilating contractors, Philadelphia, Pa., have recently obtained a contract to install hot water heating plants in each of 36 houses building at Forty-second street and Parkside avenue, Philadelphia, for F. A. Poth. Each house will be equipped with 28 radiators, with 1370 square feet of radiating surface. Eight-section No. 1 Mercer boilers will be installed and supply and return mains are to be covered. They are also installing for Edward Bromley, 1931 North Broad street, a hot water heating system of 20 direct radiators, and have just closed a contract with the Reformed Episcopal Church, Allegheny avenue and F street, for the installation of a hot water heating plant consisting of 16 Coronet radiators, 693 square feet of heating surface and a seven-section No. 2 Mercer boiler. These three contracts amount in the aggregate

to \$38,800. Besides these J. W. Cuff & Co. have a large number of other contracts in course of completion and report heating and ventilating trade conditions most favorable.

At a meeting of the Master Plumbers' Association of Cleveland, Ohio, on October 1, says the *Leader* of that city, there was a large attendance and the subject of starting a co-operative supply house was hotly discussed without definite action being taken as far as could be learned. The movement has been the subject of discussion for some time, and is said to be due to dissatisfaction with the prices ruling in the market for plumbing goods.

THE CRANE COMPANY, Omaha, Neb., have purchased a plot of ground extending 132 feet on Tenth street and 66 feet on Harney street, where they will erect a \$60,000 business building, for the accommodation of their Plumbers' and Steam Fitters' Supply business. The new establishment will have excellent railroad facilities, as a track extends by their property on the Harney street front.

DANIEL S. INGERSOLL, a plumber of Beverly, R. I., died at his residence on September 30, aged 64 years.

F. F. HITCHCOCK of Woodbury, Conn., has been appointed National State Vice-President for Connecticut by President E. D. Hornbrook of the National Association of Master Plumbers.

DEPUTY COMMISSIONER NEVILLE of the Department of Public Works of Rochester, N. Y., recently held a school for the instruction of plumbing inspectors, when the plumbing regulations were read section by section and the spirit and letter were thoroughly explained. This course of proceeding is one that could be followed by officials in many cities with advantage to all who have plumbing work done.

New Firms and Changes.

THE KELLOGG & WAKEFIELD MFG. COMPANY, Hartford, Conn., manufacturers of Metal Sanitary Goods, have acquired the stock and property of the Phillips-Kellogg Company of Winsted, Conn., and will transfer their business to a plant in that city.

FREEMAN BROTHERS, Ithaca, N. Y., who have conducted a tinnery's shop in the Titus Block, have purchased the entire stock of the Ithaca Plumbing Company. Their business will be considerably enlarged by this addition. The main office of the firm will be at 125 West State street.

THE EASTERN ACETYLENE GAS COMPANY, 30 Close street, Paterson, N. J., have been incorporated with a capital stock of \$125,000, of which \$75,000 is common stock and \$50,000 preferred, \$1000 being paid in as working capital and held by the incorporators, who are J. H. Kugler, Paul W. Ryder and Edward S. Chambliss. They will manufacture Acetylene Gas Apparatus, Gas Burners, Lamps and Stoves. Their office is in charge of S. J. Holden.

HENRY CLARK has opened a Plumbing and Hardware store at Richford, Vt.

A. B. BARR & Co., Yonkers, N. H., have been incorporated for the purpose of manufacturing Steam and Hot Air Heating Apparatus.

JESSE WHITMAN has purchased the Plumbing and Hardware business of P. K. Scofield, at Bainbridge, N. Y.

SWEET BROTHERS have established a shop at Dowagiac, Mich., to conduct a business in Plumbing, Heating, Lighting and Sheet Metal work of all kinds. The members of the firm are William E. and Charles E. Sweet. They are general agents for the Doran light.

A. P. BRADBURY & SON succeed the firm of Bradbury & Stewart in the Plumbing and Stove business at Oldtown, Maine.

COPLEY & COPLEY are a new firm in the plumbing business at Riverside, Cal., composed of Fred. Copley, who was formerly a member of the firm of Copley & Taylor, and Will Copley, who has been in the employ of

McCormick & Ormond. The new firm have taken a store in the Evans Block, at Tenth and Main streets.

An Automatic Caterer.

Recent visitors to the Earl's Court Exhibition, near London, have found a brand new feature in the penny in the slot line which is exciting considerable interest and comment. The *London News* describes it as follows: It will probably be approached with distrust, for it looks like a cross between a chemist's shop and a place for the distribution of instant death. Nevertheless, it is not only innocent, but beneficent, being an apparatus for providing food on the penny in the slot principle. At the same time it does not in every case give up its good things for so small a coin. It demands varying numbers of pennies up to six, the sum being in accordance with the blessing bestowed. There are many slots, and if you put four-pence into one of them you get a nice tray, bearing a small pot of sugar, a little jug of milk, a cup and saucer and a tasty teapot containing tea. You fill the pot with hot water at another part of the shrine, and you do so for nothing as often as you like, hot water and soda water being free in this latest product of civilization. Another gratuity is an arrangement for washing glasses. Tumblers are ready to hand, and if the one you get hold of has been used before you have only to press it upside down on a thing that looks like a big bunion. Thereupon a powerful jet of water rises from the bunion and rinses all the microbes out of the glass. Roll and butter, cake, ices and teetotal drinks of all kinds can be got by putting one or more coins in the proper slots; but the automatic buffet at Earl's Court refuses to give way to the craze for drink, though half a dozen of its brothers are about to do so in the city. The Earl's Court buffet will remain for three years, during which its patrons will be able to see how fast they can bolt food without wrecking the digestion. It is said that miraculous speeds have been attained in Germany (the home of the invention), Austria and Belgium. In Cologne, for example, one of these machines has supplied 12,000 glasses of beer and 5000 sandwiches to the public in one day without any appreciable rise in the death rate. One of the beauties of the apparatus is that you can neither cheat it nor be cheated. If there is anything wrong it automatically returns your money, and if you insert a French penny or a fraudulent disk of any kind it scornfully rejects the offering.

TRADE NOTES.

THE BACKUS HEATING COMPANY of Brandon, Vt., have awarded the contract for the construction of their foundry and machine shop to C. W. Carr & Son. The buildings will be of wood, one 40 x 145, of one story, and the other 32½ x 82½ feet, of two stories.

WITH reference to the report of an agreement on prices between the European Aluminum manufacturers and the Pittsburgh Reduction Company, a dispatch from Berlin, Germany, quotes from the *Frankfurter Zeitung* an authoritative statement to the effect that no such agreement has yet been reached. Negotiations looking to the end in question are, however, understood to be on foot.

THE BRASS and Aluminum foundry of Charles Mousley & Co., Howard street, above Girard avenue, Philadelphia, Pa., was almost entirely destroyed by fire on the morning of September 26. Valuable machinery patterns and castings were destroyed. The loss is estimated at \$15,000, said to be covered by insurance.

THE D. M. STEWARD MFG. COMPANY, Chattanooga, Tenn., since becoming the sole property of Mr. Steward some weeks ago, have made extensive improvements in their plant. They are preparing to market a new line of Cap Mantels for incandescent gas lighting.

THE REYNOLDS WIRE COMPANY, Dixon, Ill., are erecting a building as an addition to their Wire Cloth plant. The additional building will be 50 x 80 feet in size, three stories high, and will be used for the purpose of manufacturing Wire Goods, such as Corn Poppers, Dish Covers, Flour Sifters, Strainers and other articles related to the Wire Cloth trade.

Pattern for a Fork.

A correspondent in Pennsylvania wishes us to tell him how to lay out a pattern for a crutch or fork, shown in the drawing which he sends. He says he can lay out the pattern for one that is round, but cannot do it where it is in this form.

On our correspondent's drawings the measurements for the crutch were given, but have been omitted in Fig. 1, as it makes no difference what the size or shape may be, the principles here explained being applicable in any case. Let A B C D E F G H be the elevation of the fork and I J K L the profile on C D, the semicircular ends being struck from the centers M and N, the profile on H A being similar. O P R S shows the section on G E, the semicircular ends being struck from the centers T and U, while P S in soffit plan shows the miter line between the fork on B F in elevation.

It will be noticed that the width of the soffit plan at P S is equal to J L in the section on C D in elevation.

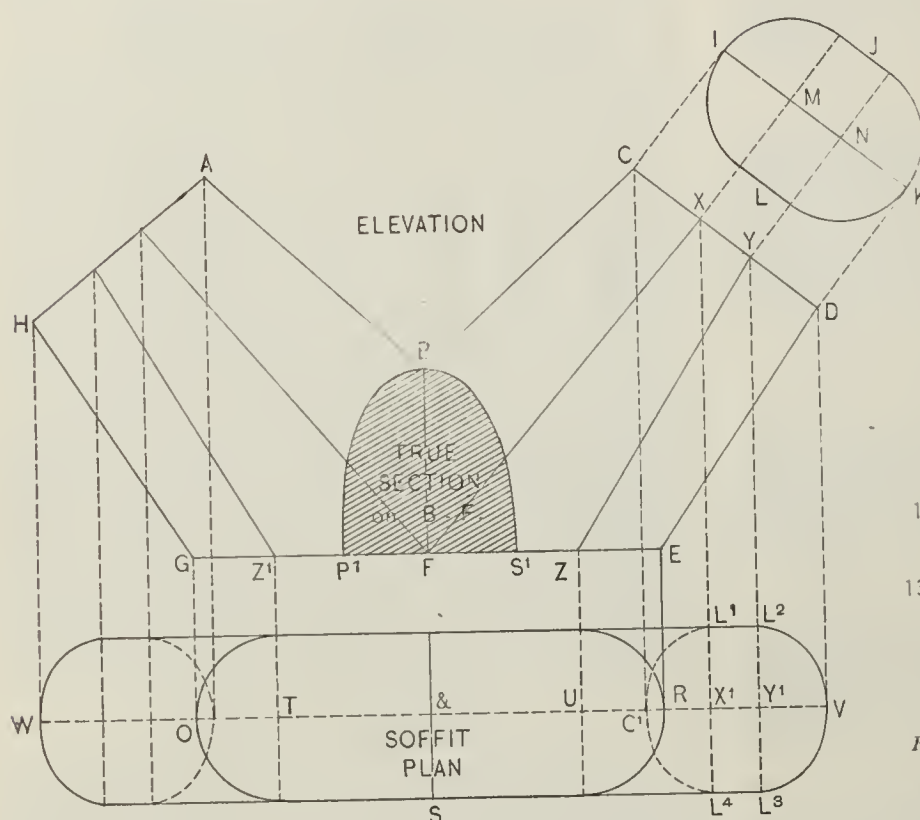


Fig. 1.—Plan, Elevation and Sections.

PATTERN FOR A "Y" OR FORK.

To complete the plan proceed as follows: Through the centers T and U in plan extend the line indefinitely either way, as shown by V W. At right angles to V W, and from the centers T and U, draw lines intersecting the base line G E at Z and Z'. In similar manner, at right angles to I K in the elevation and from centers M and N, draw lines intersecting the line C D at X and Y respectively. From X draw a line to F and from Y draw a line to Z; then that portion shown by X Y Z F will remain perfectly flat, the top and bottom having curved sections. From the points C and D in elevation, and at right angles to V W in plan, draw lines intersecting the center line W V at C' and V respectively. In similar manner, at right angles to W V and from points X and Y, drop lines indefinitely, intersecting the line W V in plan at X' and Y' respectively. Now take the distance from M to L in profile in elevation and place it as shown from X' to L', Y' to L', Y' to L' and X' to L'. Draw a line from L' to L' and from L' to L', and draw an elliptical figure through L' V L' and L' C' L', which will be the soffit plan on C D in elevation. Draw this plan in its proper position on the opposite side and W P V C' S O will be the correct soffit plan of the fork, all as shown by the dotted lines.

It now becomes necessary to obtain a section through

P S in plan, for which proceed as follows: As P S represents the base width in plan and F B in elevation the vertical height on the center & in plan, take the width of & P and & S in plan and place it as shown by F P' and F S', respectively, in elevation. Through the points P' B S' draw any section at pleasure, as shown by the shaded lines, which represent the true section on B F in elevation.

As the arm will be developed by triangulation, it will be necessary to obtain sections with which to develop the pattern, for which proceed as follows: Let 1, 8, 9, 19, 16 in Fig 2 be a reproduction of C D E F B in Fig. 1. Take a tracing of the half profile I J K and place it as shown by 1, 5, 8 in Fig. 2. In similar manner take a tracing of the quarter plan & R S in Fig. 1 and place it in Fig. 2, as shown by 19, 9, 13, and finally take a tracing of the half section in elevation, B F P' in Fig. 1, and place it as shown by 16, 19, 13' in Fig. 2. As the two arms shown in Fig. 1 are symmetrical, then the pattern for the one will answer for the other, and the part elevation and the sections thereon in Fig. 2 be all

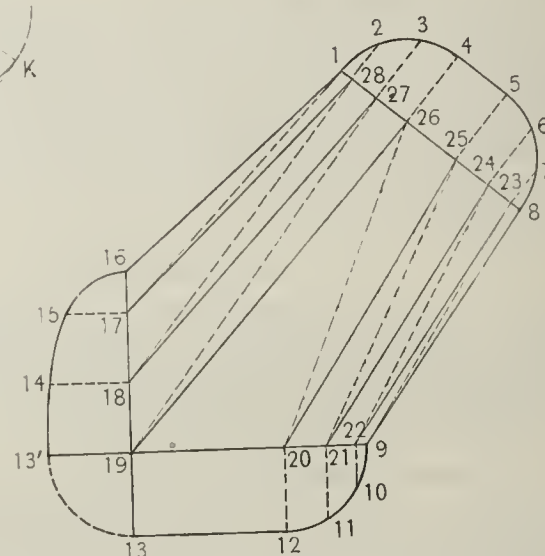


Fig. 2.—Diagram for Obtaining Measurements for Sections.

that is required for obtaining the patterns for the fork. Divide the sections 1 5 8, 9 12 13 19 and 19 13' 16 into equal spaces, as shown by the small figures 1 to 8, 9 to 13 and 13' to 16 respectively. At right angles to 1 8, and from the small figures 2 to 7, draw lines intersecting the line 1 8 from 28 to 23 respectively. In similar manner, at right angles to 9 19 and 19 16, and from points 10, 11 and 12, and 14 and 15, draw lines intersecting the lines 9 19 and 19 16 at 22, 21, 20 and 18 17 respectively. Now draw solid lines from 28 to 17, 27 to 18, 26 to 19, 25 to 20, 24 to 21 and 23 to 22, and dotted lines from 1 to 17, 28 to 18, 27 to 19, 26 to 20, 25 to 21, 24 to 22 and 23 to 9. Then will these solid and dotted lines represent the bases whose vertical heights are equal to the various sections or profiles.

For the sections on solid lines proceed as is shown in Fig. 3, where the various base lines of the sections have similar figures as the base lines in Fig. 2, and the various figures of the heights in Fig. 3 correspond to the various heights in the profiles in Fig. 2. For example, take the distance of 19 26 in Fig. 2 and place it on any horizontal line, as 19 26 in Fig. 3. At right angles to 19 26, and from points 19 and 26, draw the lines 19 13' and 26 4 equal to 19 13' and 26 4, respectively, in Fig. 2. Then draw a line from 4 to 13' in Fig. 3, which will equal the actual

distance on the finished article on the line 26 19 in Fig. 2. In precisely the same manner obtain the diagrams of sections on dotted lines as are shown in Fig. 4, where similar numbers represent similar bases and heights in Fig. 2.

For the pattern proceed as follows: Draw any vertical line, as 1 16 in Fig. 5, equal to 1 16 in Fig. 2. Now, with 16 15 as radius and 16 in Fig. 5 as center, describe the arc 15; then, using 1 as center and 1 15 in Fig. 4 as radius, describe an arc intersecting the arc 15 in Fig. 5. Now, with 1 as center and 1 2 in Fig. 2 as radius, describe the arc 2 in Fig. 5, which intersect with an arc struck from 15 as center, with a radius equal to 2 15 in Fig. 3.

Proceed in this manner, using alternately as radius first the divisions in the profile 16 19 13' in Fig. 2, then the lengths of the slant lines in Fig. 4; the divisions in

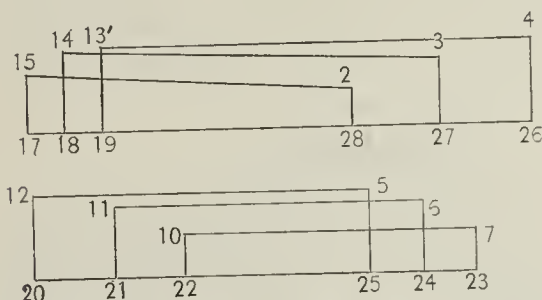


Fig. 3.—Sections on Solid Lines in Fig. 2.

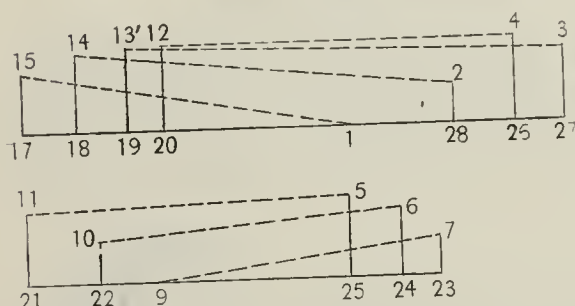


Fig. 4.—Sections on Dotted Lines in Fig. 2.

the profile 1 5 8 in Fig. 2, then the lengths of the slant lines in Fig. 3, until the line 4 13 in the pattern in Fig. 5 has been obtained. Then proceed in the same manner, using alternately as radius first the divisions in the profile 9 13 19 in Fig. 2, the lengths of the slant lines in Fig. 4, the divisions of proper number in the profile 1 5 8 in Fig. 2, then the lengths of the slant lines in Fig. 3, the length of 8 9 in pattern in Fig. 5 being obtained from 8 9 in Fig. 2. Trace a line through points thus obtained in Fig. 5, as shown by 1 4 5 8 9 12 13 16, which will be one-half of the pattern. Trace the other half opposite the line 1 16, as shown. Then will 1 8 9 13 16 13' 9' 8' 1 be the completed pattern for one arm, of which two are required, one right and one left, to complete the fork.

John L. Blankemeyer.

John Leon Blankemeyer, president of the Toledo Foundry & Machine Company, died September 20 at the City Hospital, Toledo, Ohio, at the age of 58 years. Six years ago, while examining a heavy piece of work, Mr. Blankemeyer met with an accident which permanently destroyed his nervous system and since that time he was more or less of an invalid. Two months ago his condition became so alarming that he was removed to the hospital. His death occurred very suddenly in that institution. Mr. Blankemeyer was born in Amsterdam, Holland, and at the age of 18 went to London, England, where he served an apprenticeship in the iron manufacturing business. At the age of 22 he came to this country, arriving at the close of the Civil War. He went directly to Toledo and obtained employment with Henry Moore & Sons of that city. After five years he

bought out the business and founded a stock company, which is now known as the Toledo Foundry & Machine Company, with which concern he was actively engaged up to the time of his death. The company are large manufacturers of tin can and steel range machinery and other sheet metal working tools. Mr. Blankemeyer was a prominent figure in the industrial life of his city, and was also actively connected with the marine interests of the port. He was married twice and is survived by a widow, three sons and three daughters. The funeral took place from the Emmanuel Methodist Episcopal Church, Toledo, on September 27, and the interment was made in the Forest Cemetery.

THE AMALGAMATED RULES AND TIN PLATE PRODUCTION.

The restriction of production in the tin plate plants operated under the rules of the Amalgamated Association is a serious matter. Under these rules, for instance, the output of a hot mill running on No. 30 gudge black

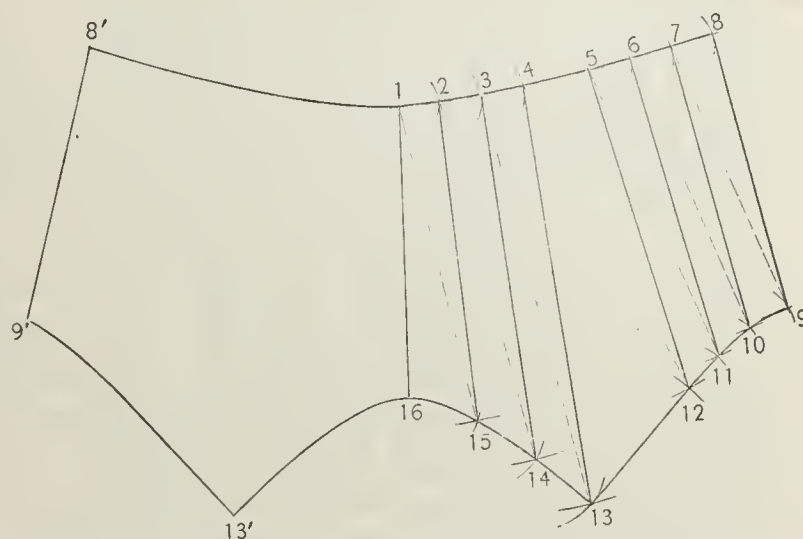


Fig. 5.—The Pattern Shape for One Arm.

PATTERN FOR A "Y" OR FORK.

plate is 5750 pounds in an eight-hour turn. It has been demonstrated by experience in nonunion mills that a crew can easily roll 7000 pounds, and with a fair degree of energy the product is run up to 8000 pounds. Taking the minimum of these quantities, it will be seen that the output of the mill could be increased fully 20 per cent. The Amalgamated Association controls only the hot mills, but the other departments of a tin plate plant are, of course, dependent on the hot mills for their supply of material. The production of these departments is consequently restricted to the same extent. It is unquestionably an unreasonable handicap which is thus placed on the owners of a tin plate plant, preventing them from realizing the full output of which their machinery is capable. The workmen on hot mills being paid by the ton, their daily earnings would, of course, be increased with the increased production.

Drawing Presses and Spinning Lathes.

The E. W. Bliss Company of Brooklyn, N. Y., are distributing a 48-page catalogue covering the drawing presses and spinning lathes manufactured by them, and also those formerly made by the Stiles & Parker Press Company. These presses were awarded a grand prize at the Paris Exposition in 1900. A view of the E. W. Bliss Company's machine shops is presented on the first page, followed by one of the concern's large erecting shops in Brooklyn. The first part of the catalogue is devoted to illustrations and descriptions of the Bliss patent toggle drawing presses, which are equipped with all the latest patented devices, and are claimed by the manufacturers to be the acme of toggle drawing presses. They are offered in 11 sizes, and are equipped with the

company's automatic friction clutch. These presses are suitable for working all kinds of sheet metal articles, from the smallest to the heaviest stamped utensils made. The press No. 13 is calculated to manipulate blanks up to 38 inches in diameter and to draw articles up to 27 inches in diameter and 11 inches in depth. The Bliss bottom slide drawing press with movable bed is also given attention, together with a line of patented double action crank presses for the forming of small sheet metal articles. Among other machines illustrated and described are cutting, drawing and stamping presses, cam drawing presses and paper drawing presses, also a line of Bliss reducing presses. Bliss spinning lathes occupy the last few pages of the catalogue. Tables of weights and sizes of the various parts of all these machines are also provided, together with a telegraphic code for use by purchasers in ordering machines or their parts by wire.

Enlarging the Monessen Tin Plate Works

The Monessen Works of the American Tin Plate Company, at Monessen, Pa., will be doubled in capacity at a cost of more than \$500,000. The decision to increase this plant was a direct result of continuous operation through the strike, this being the only works of the American Tin Plate Company that was not shut down. Contracts have been awarded to the American Bridge Company for structural material and extensions, and to the Bass Foundry & Machine Company of Fort Wayne, Ind., for engines of 1500 horse-power. Six mills have already been started from the plant at Canal Dover, which is to be dismantled as a result of the strike there. There is also a possibility that six more mills will be brought from Cambridge, Ohio, as the machinery for the three plants is identical. Part of the machinery has been taken to Monessen and it is expected that ground will be broken in a few days. C. W. Bray, chief engineer of the American Tin Plate Company, and P. E. Donner, manager of the Monessen plant, will be in charge of the improvements. Some of the structural iron buildings for the increased capacity are now in course of erection and excavations for the same are being made.

Architectural Ornaments in Sheet Metal.

A catalogue issued by Martin J. Frand & Co., 110-112 Arch street, Camden, N. J., contains illustrations of an extensive assortment of architectural ornaments, which they manufacture of sheet zinc, brass, copper and cast zinc. The catalogue is the "sixth series," and is intended for the season of 1901. The size and shape of the publication is such as to permit of the use of a large number of illustrations on each page, together with an indication of the size of the ornament and its price. The illustrations cover moldings, rosettes, center pieces, finials, crestings, brackets, urns, capitals, spindles, heads of various kinds, figures, statuary, monuments, designs for ceilings and siding, building fronts in imitation of rock face stone and brick, cluster steel shingles for roofing, mansards and siding, embossed metal tiling, &c.

Interiors of Sheet Metal.

We have received from the S. Keighley Metal Ceiling & Mfg. Company, 819-823 Locust street, Pittsburgh, Pa., a copy of a 30-page catalogue, which they have just issued, showing illustrations of designs for ceilings, siding, &c., in sheet metal. The illustrations are for the most part half-tones, and in many cases are of a size to fill an entire page measuring 7 x 10 inches. The catalogue is bound in deep green covers, stitched at the back with red silk and cord. In the early pages are to be found instructions for putting up lap joint ceiling as well as the company's lock joint dust proof ceiling. Some of the illustrations show interiors ceiled with sheet metal, producing very artistic effects. In addition to the designs of ceiling and siding are moldings, cornices, beam coverings, center pieces, &c.

The Tin Plate Workers.

A Pittsburgh dispatch of October 3 says that the American Tin Plate Company have adopted a policy of conciliation toward their employees who were recently engaged in the steel strike. While the terms of settlement of the strike do not permit the recognition of the Amalgamated Association in some of the company's works not the slightest discrimination, it is officially stated, will be allowed against the old men when they return to work.

The tin workers of the Star and Monongahela plants have not yet resumed work as a body. Some of the old men have gone back to the mills, but the majority of them are still waiting for recognition of their union. Aided by the nonunion men brought to the plants during the strike the management has been able to operate both mills successfully since the strike was declared off. All the tin mills of the country are overcrowded with orders at the present time and a prosperous winter is assured.

FLASHINGS.

THE JACKSON IRON & STEEL COMPANY, recently incorporated with a capital stock of \$300,000, at Clarksburg, W. Va., will erect a 14-mill Tin Plate plant. Contracts for machinery have been placed, and the erection of buildings will begin at once. The officers of the company are: T. Moore Jackson, president; W. I. Grove, secretary, and C. C. Moore, general manager.

THE YOUNGSTOWN IRON, SHEET & TUBE COMPANY of Youngstown, Ohio, have placed an order with the Lloyd Booth Company department of the United Engineering & Foundry Company, Pittsburgh, Pa., for one 26-inch Sheet train, one 20-inch three-high Bar mill, two squaring shears, two lever shears, two roll lathes, and other tools.

THE DOWMAN MFG. COMPANY, Atlanta, Ga., are engaged upon a number of important contracts for Tin and Metal work on large buildings, including the Grant Building and the Central Bank Block at Atlanta; the Alumni Hall at Durham, N. C.; the Telephone Exchange, the Smith & Zinkle Building and the Houghton Building at Montgomery, Ala.; the Thiesen Building at Pensacola, Fla., and the new tennis court at Aiken, S. C. The company report that they are also in receipt of a large number of orders for their Dixie Ventilators.

THE British Board of Trade returns for the month of August show a considerable increase in the shipments of Tin Plates to the United States. The total exports during the month amounted to 8508 tons, as compared with 4166 tons in August, 1900. The total shipments of Welsh Tin Plates to this country for the first eight months of the present year aggregated, according to the same authority, 41,369 tons, as against 39,251 tons in the corresponding period of 1900. The increase, of course, was due to the shutting down of most of the Tin Plate mills in this country, bringing about a scarcity of American Plates in the home market.

THE Sheet mill of the American Sheet Steel Company, at Carnegie, Pa., is being dismantled, and the equipment is being sent to Leechburg, Pa., where it will be stored for the present. The office force from Carnegie have been transferred to Vandergrift, Pa.

A BLOTTER, issued by the J. M. & L. A. Osborn Company of Cleveland and Columbus, Ohio, bears a half-tone illustration of the First Methodist Episcopal Church, Troy, Ohio, a handsome building, which is roofed with Osborn's Genuine Charcoal Iron Old Style Roofing Tin.

THE strike is a matter of history at McKeesport, Pa., nearly all the industrial works there being in full operation. The Boston rolling mills of the National Tube Company started on Monday, and by the end of this week the National rolling mill of the same concern will be in operation. The Tube mills of the National Tube Company are running full, as are also the Wood plant of the American Sheet Steel Company and the United States works of the American Tin Plate Company at Demmler. Many of the men who were leaders in the strike and who gave a good deal of trouble have been

notified that their services will not be needed. Agents of foreign Tube mills have employed a good many men, and some of the most skilled Tube workers have made five-year contracts to work in English mills.

THE Sheet Bar mill at the new plant of the Youngstown Iron & Steel Roofing Company, at Youngstown, Ohio, is about finished and will be started up in a few days. This bar mill was not finished at the time the Sheet mills of this concern were started up a month ago.

It is claimed that the McKeesport Mfg. Company, recently organized at McKeesport, Pa., will build a Sheet mill, to be located somewhere along the Monongahela River, in the Pittsburgh district.

THE CUMBERLAND WORKS of the American Tin Plate Company, at Cumberland, Md., have been abandoned. The mills have been shipped to the Humbert Works, at Connellsville, Pa.

THE STANDARD PAINT COMPANY, 100 William street, New York, are sending out a 14-page illustrated booklet in which facts about their Ruberoid Roofing are demonstrated. This Roofing is designed for all kinds of buildings, from the light temporary frame structure to large brick, stone or iron buildings.

JOSEPH BIECHELE, president of the Berger Mfg. Company, Canton, Ohio, was one of the honorary pall bearers at the funeral of the late President McKinley. Mr. Biechele was a long time friend of President McKinley.

Telephone Systems in Private Houses.

It is not uncommon at the present day to find in many of the more pretentious private houses a modern telephone system connecting the various departments of

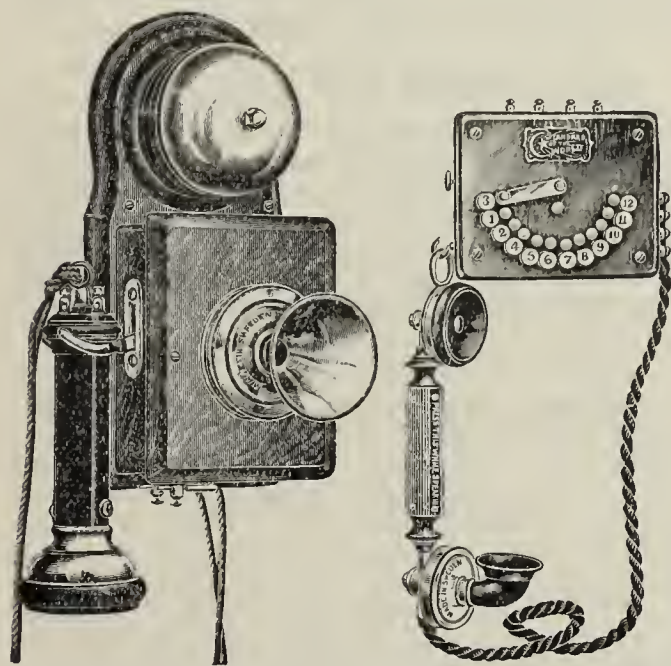


Fig. 1.—General View of Telephone for Private House. Fig. 2.—The Microtelephone with Intercommunicating Switch.

TELEPHONE SYSTEMS IN PRIVATE HOUSES.

the household with each other. The main advantage of the telephone over the speaking tube is that one outlet or one 'phone can be used to communicate with all the different stations, whereas with the speaking tube a separate mouthpiece was needed for each and every station. In locating these outlets for the telephone great care should be taken in placing them where they will be most convenient for the use of the household, and also where they will not interfere with any of the fittings of the house which are to be installed at a later date, such as radiators, sideboards, &c. A very convenient place is near the casing of the door, where it is almost impossible to place any heavy article of furniture, but caution should be used in first ascertaining which way the door is to swing.

The wire cable which is used in connecting the various stations should run as far from the water pipes as possible, on account of breaks in the pipes which are liable to occur and the moisture from which would injure the wires, make cross connections, cause leaks of current and soon destroy the vitality of the battery. A cable having a weather proof insulation is preferable, not only on account of the properties which prevent moisture from entering it, but also because a cable of this kind is not attacked by rats or mice. These animals gnaw the insulation, and, while they do not injure the wires, in the ordinary cable they frequently cause crossing or grounding of wires which are difficult to locate and is very annoying both to the owner and the electrician.

Wall pockets or receptacles for holding the telephone are very useful at the outlets, for while keeping the telephone fully covered they do not deface the walls, and by their use many of the connections can be made inside and a buzzer or bell can be placed within for the purpose of calling that station. The telephone itself can be very small and compact, as shown in Fig. 1, and by using the hand microtelephone in connection with a selective switch, Fig. 2, an instrument having a capacity of 15 stations will occupy a space of only 4 or 5 inches square. These two simple instruments, which are obtained from the Ericsson Telephone Company of 296 Broadway, New York City, are well adapted for household purposes, and can be finished as regards the wood work to match the finish of the room, and thus the telephone can be made an ornament as well as a great convenience. In some mansions the wooden cases have been made of solid ebony, rosewood or other costly woods, while the metal parts have been gold plated.

There is no limit to the flexibility of a system of this description, as any station can call all the departments or it can be so wired as to call only a certain number. Arrangements should be made for bringing the cable to a point where it can be attached to wires going to the stable, greenhouse, &c., these connections being especially convenient for the lady of the house, as in ordering the carriage for a drive, &c.

By a simple attachment in the owner's chamber the telephone system can be instantly converted into an alarm system, and all the bells be made to ring at one time by the simple pressure of a special lever. This can be used in case of fire, burglars or sickness, and is valuable in suburban residences.

The cable itself should be installed while the house is in process of construction, and should be put in place before the studding is covered with lath and plaster. The instruments themselves should not be placed on the wall until all workmen have left the building for good, as a telephone is apt to be regarded as an object of curiosity by the men doing other work and oftentimes considerable damage is done by their carelessness.

Briquettes from Garbage.

United States Consul Warner, at Leipzig, Germany, reports that a process has been discovered in France by which garbage is converted into briquettes for fuel purposes. The process consists of mixing refuse from abattoirs, fish markets, &c., waste paper and the like and adding thereto tar and naphthalene. The whole mass is then mixed in a kneading apparatus, dried and pressed into briquettes. These briquettes are described as having a slight odor of gas and they are said to burn brightly and slowly. A report from the Paris Municipal Laboratory states that with a more highly perfected method of manufacture they will produce less ash and the heat producing qualities will be about equal to those of common coal. They are also said to possess the advantage of burning slowly and developing no smoke. This method of treating garbage seems to promise a good solution to the problem of the disposal of city garbage. It would certainly secure a more profitable disposal of refuse than the cremation process, in vogue in so many cities, which is practically a waste of material.

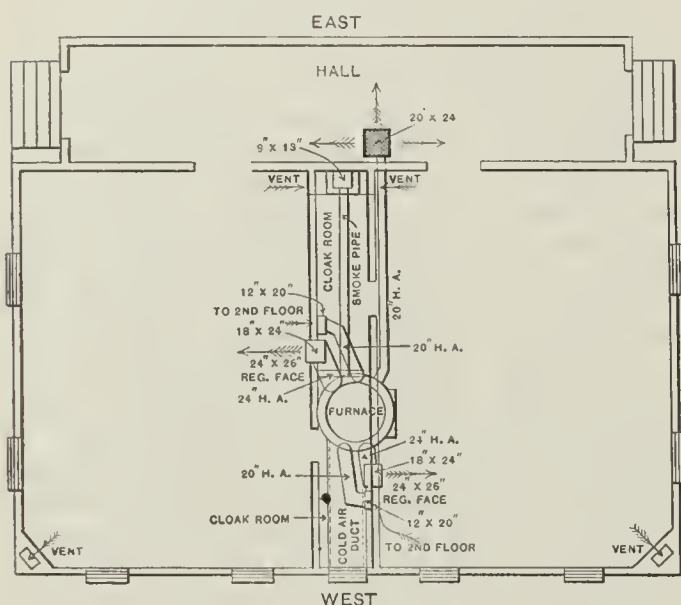
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

FURNACE QUESTIONS ON SCHOOL HEATING.

From T. J. Grier, Martin's Ferry, Ohio.—In answer to the inquiry of "J. M." in *The Metal Worker* of September 21, I will say that on the plan given in Fig. 1 there is all the necessary data that will be required in



Furnace Questions on School Heating.—Fig. 1.—Plan Showing Suggested Arrangement of Plant.

installing a hot air system for the school building he refers to. In the first place it will be necessary to locate the furnace properly in the cellar; next, be sure to get the hot air pipes amply large. Then be sure to get register faces of proper size for the hot air pipes. Then he can provide a proper sized window on the west side of the building for the cold air supply. The cold air

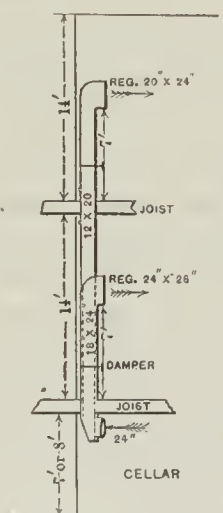


Fig. 2.—Elevation, with Dimensions.

supply should be equal in square inches to the combined area of all the hot air pipes, which is 1857.26 square inches. The cold air supply should have some means by which the supply could be regulated, as some days the outside temperature would be very low and it would not require as much air as when the temperature is higher. I would suggest a 20-inch hot air pipe with 20

x 24 register face for the hall. For the first floor rooms 24-inch pipes with 24 x 26 register faces with 18 x 24 inch wall stacks. For the second-floor rooms 20-inch pipes, 20 x 24 inch register faces and 12 x 20 inch wall stacks.

As for ventilation, I do not have much faith in the two vents already provided in the building, but, of course, they may be used by placing a register face as near the floor as possible, and have these faces as large as flues will permit. I would also provide vent flues, as are shown on the drawing in end of cloak room around smoke flue. As the smoke flue will be heated this will help to keep the vent stacks warm. These stacks should be equal in square inches to the hot air supply, if possible, and the register faces in them should be placed as near the floor line as possible, and be equal in size to the hot air register faces. The vent stacks may be made of galvanized iron or flooring boards built up tight. This vent stack should be made to vent the first and second floor rooms. It is not essential that this stack run out of the roof. Let it empty into the attic and the vitiated air will find its way out. The hot air stacks should run from the cellar to 7 feet above the floor in each room, as shown in Fig. 2, which is an elevation giving dimensions. This will insure good circulation and uneven drafts will not be felt. If the building is up I would suggest running the pipe, as shown, in the cloak rooms. It would be better if they were well wrapped with asbestos paper and then cased in with some suitable material, such as ceiling boards or flooring. It would be well to place the register in the hall in the floor, as it will be a good place for pupils to warm their feet on entering the school building. I would recommend a brick set furnace for this job, rated by the manufacturers at 60,000 to 75,000 feet. I would further suggest that all hot air pipes be made of 26 or 28 gauge galvanized iron. Follow drawings and there will be no difficulty in heating the building satisfactorily.

RED PEPPER FOR RED ANTS.

From W. T., Peterboro, N. H.—In reply to the inquiry of "C. B. B." in *The Metal Worker* of September 14, I wish to say we have been troubled with ants until within the past six weeks. My wife has got rid of all kinds, big and little, red and black, by using carbolic acid. She has hunted for the holes and cracks, and then poured the carbolic acid in them. It is a certain fact that ants are not at work on our stock at present.

WHY WAS LEAD PIPE DESTROYED?

From S. & M., Piedmont, W. Va.—We have just received *The Metal Worker*, September 21, and having read the answer to our inquiry in regard to pitting of lead pipe, beg to thank you for the information. The suggestion in the answer of the fact that carbonic acid gas will eat lead pipe is no doubt the solution of the problem. These cinder banks in which the lead pipe was imbedded get very hot sometimes, and when they get wet emit large quantities of carbonic acid gas.

WANTS AN AQUARIUM.

From F. J. B., Tampa, Fla.—I desire to make an aquarium and hope that some reader of *The Metal Worker* who has made one will be kind enough to explain the construction and materials used, especially the cement, and give sketches, if necessary, showing the aquarium and how the different parts are joined.

The value to shipping interests of wireless telegraphy was proved last week by the Cunard steamer "Lucania," which, in her passage from New York to Liverpool, passed the steamer "Campania" of the same line coming in the other direction. Communication was enabled to be maintained between the two vessels in mid ocean for over two hours by means of their wireless telegraph instruments. The shortest distance in which communication was effected was 33 miles and the longest 65 miles. A number of messages were exchanged.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is firmer, but dull.

Copper prices are unchanged, but the market is quiet and rather unsettled.

Pig Lead is without change in price, and somewhat dull.

Spelter is slightly higher, but volume of business is light.

Antimony is unchanged.

Nickel remains firm and in good demand.

Aluminum is active and firm.

Tin Plates are still in short supply, with prices nominal.

Black Sheets continue scarce and prices rule high.

Galvanized Sheets are in better supply than Black and slightly lower in price.

Scrap Iron is in good demand and strong in price.

Sheet Copper is unchanged.

Sheet Zinc is in moderate demand at former prices.

Foundry Pig Iron is moving in large volume and prices are advancing.

Hardware business is active, and prices generally firm and unchanged.

Plumbers' Supplies are strong in price and business is active.

Wrought Iron Pipe is unchanged.

Plumbers' Brass Goods are in good demand, with prospect of prices holding.

Plumbers' Wood Work is scarce and strong in price.

Plumbers' Marble has been advanced in price.

Registers are stiffer in price.

Sheet Brass is firm and more uniform in price.

Copper Wire prices are very weak and irregular.

Block Tin Pipe has been marked down in price 2½c.

Wire Nails are active, with prices steady.

Cut Nails are unchanged.

Wire continues in sharp demand, with prices strong.

White Lead is in good demand; prices show some irregularity.

Linseed Oil is quiet; prices are without change.

Spirits Turpentine is firm and quiet.

Old Rubber is in moderate demand at former prices.

METAL MARKET.

NEW YORK, October 4, 1901.

Pig Tin.—While business was less active and prices rapidly declined in the early portion of the week, a reaction which set in on the London market on Wednesday caused a rise in prices in this market which brought them up to about the level of a week ago, leaving the market distinctly firmer at the close. Straits Pig, in small lots, is now quoted at 25¼c. to 26c. per lb. The statistical position of Tin at the opening of the month showed up a little better than was generally expected, but it seems that the heavy shipments from the Straits have taken the confidence out of the market on the other side, it being expected that these shipments will keep up in large volume during the rest of the year. The market here is in a peculiar condition. The Boston "bull" interests are loaded up with high priced stock for spot, and especially future, deliveries, while the consumers, by reason of a declining market, have covered their wants for this year, and in some instances even for the first quarter of next year. It is this condition that accounts for the lack of demand at present from consumers. The statistics for Europe and the United States, as compiled by the New York Metal Exchange, show:

Total visible supply September 30, 1901.....	Tons. 17,611
Against visible supply August 31, 1901.....	16,327
Against visible supply September 30, 1900.....	17,606

Copper.—No change has taken place in Copper conditions here. Consumers are still buying from hand to mouth, and where the delivery extends over any length of time, the purchaser is protected by a guarantee clause. It is said that the large consumers have been buying Lake Copper on this basis ever since the talk of the possibility of cutting prices began. Lake Ingot in small lots is generally quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c. Owing to the low prices for spot and future deliveries in London, a heavy business was transacted there. And it is rumored that a good portion of this was done by parties who contemplated bringing it here for refining. The disappearance of the premium on futures is considered an unfavorable sign by merchants here. It is regarded as an indication that there is not much confidence in the future of the metal.

Sheet Copper.—Manufacturers and jobbers alike report that a fair demand continues for Sheet Copper, which generally exceeds that of former years at this season. Prices are held firmly on the basis of 21c. per lb. for moderate sized lots from store.

Pig Lead.—There are some lively rumors floating about in regard to the probability of a huge Lead combination. These rumors have served to unsettle the market, which already had been influenced by reports of overproduction and accumulation of stock. It is alleged that the American Smelting & Refining Company are carrying tremendous stocks of the metal. Parties in the trade, however, who keep close to existing conditions are not surprised to hear this, and do not regard it as of much moment. American Pig in small lots is quoted at 4.62½c. to 4¾c. per lb. St. Louis advices report the Pig Lead market there as quiet with a fair demand ruling, and prices the same as a week ago.

Spelter.—This metal is slowly advancing in price, but the volume of business is not increasing; in fact, the market is rather quiet. It is rumored that certain interests in the West are raising the price a little, in order to dispose of the surplus stock which accumulated during the Steel strike. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb. St. Louis reports a continued heavy demand for Spelter in that market. Prices have shown some fluctuation, and the feeling prevails that from the present level prices are apt to go higher.

Sheet Zinc.—No change has taken place in the position of this article. Jobbers are quoting 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7c.

Antimony.—Is unchanged. Hallett's is quoted in small lots at 8½c. to 9¼c. per lb., and Cookson's at 10½c. to 11c.

Nickel.—There is no change in this metal. Prices are firm, small lots being quoted at 60c. to 65c. per lb.

Aluminum.—An active demand prevails for this metal, prices being the same as ruling for some time past. No. 1 Ingot, guaranteed over 99 per cent. pure, is quoted in small lots at 37c. per lb., and in 100-lb. lots at 35c.

Tin Plates.—There is nothing new to report in this market. The demand continues to be of a hand to mouth character. Large consumers, as a rule, are awaiting deliveries of orders placed by them before the strike occurred, while the smaller trade are buying only such supplies as they are in absolute need of, expecting that, with the resumption of work at the mills, the present high prices asked by jobbers will be very materially reduced. The current volume of trade is consequently quite light. Jobbers have not yet begun to receive shipments from the mills and their stocks are greatly depleted; in fact, the market is absolutely bare of some of the lighter gauges of Coke Plates and consumers are forced to purchase heavier Plates in cases where they must have material for immediate use. It will probably be several weeks before any sensible increase in the

stocks of Tin Plate is noticeable on the general market. Prices in this market are still entirely nominal. American Bessemer Coke Plates, I C, 14 x 20, are selling anywhere from \$6.50 to \$7.50, according to circumstances. A further slight decline in the price of Welsh Plates occurred this week.

Sheets.—The strike, so far as the Sheet trade is concerned, is a thing of the past. The output of Sheets at the present time is probably larger than ever before in the history of the trade. In spite of this it will take the mills several months to catch up with contracts. The feeling is, perhaps, a little easier, especially in the matter of Galvanized Sheets, but Black Sheets are as scarce or scarcer, than ever. There is still a wide range in prices, and the market is difficult to quote. Eastern jobbers quote No. 27, One Pass, Cold Rolled Soft Steel Sheets at about 4.15c. to 4.20c., and Galvanized Sheets at 60 and 10 per cent. to 65 per cent. off the list.

Chicago advices are as follows: With the exception of Stove Pipe sizes the demand from stock is not so urgent. Nevertheless stocks in local warehouses are so broken, and shipments from the mills are coming forward so slowly, that prices are still held up to top figures. Small lots are quoted at 4c. to 4.10c. for No. 27 Black Sheets and 60 and 5 to 65 off for Galvanized Sheets. The mills are reported to be oversold on No. 18 Sheets and heavier, and consumers are being advised that it will be some time before the supply will be adequate to the requirements of the market.

Old Metals.—A good demand still prevails for Scrap Iron. Other lines of Old Metals are rather quiet. Prices remain at about last week's level. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	14½c.
Light and Tinned Copper.....	per lb.	12½c.
Heavy Brass	per lb.	9 c.
Light Brass	per lb.	7½c.
Lead	per lb.	4 c.
Tea Lead	per lb.	3¼c.
Zinc	per lb.	2¾c.
No. 1 Pewter.....	per lb.	18½c.
No. 2 Pewter.....	per lb.	9 c.
Tin Plate Scrap, per gross ton.....		\$8.00
Wrought Iron Scrap, per gross ton.....		\$10.50 to 11.00
Heavy Cast Scrap, per gross ton.....		10.25 to 10.50
Stove Plate Scrap, per gross ton.....		7.25 to 7.50
Burnt Iron, per gross ton.....		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Sellers report a moderate movement in this district. Melters generally report a good deal of activity, and the consumption seems active. Some of the leading furnace companies of Eastern Pennsylvania have taken so many orders that their stocks are being reduced quite rapidly. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$15 to \$15.50; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$14.75 to \$15; No. 2 Soft, \$14.50 to \$14.75; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—The past week has been the heaviest in regard to tonnage placed under contract since early in the spring. The good condition of the Steel trade has evidently had an effect on Pig Iron buyers. The stiffening in Southern prices must also be credited with some little influence in improving the tone of the trade. All classes of consumers were represented among the buyers and much of the Iron was purchased for deliveries running through a considerable portion of next year. Many more inquiries are in the market and the coming week promises to be another period of large business. The Southern furnace companies have advanced their prices and quotations have been marked up accordingly. Northern furnace companies are reported to have made some concessions to the heaviest buyers and thus prices have been more nearly equalled. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.50 to 16.00
Local Coke Foundry, No. 2.....	15.00 to 15.50
Local Coke Foundry, No. 3.....	14.50 to 15.00
Local Scotch, No. 1.....	15.75 to 16.25
Ohio Strong Softeners, No. 1.....	16.00 to 16.50
Southern Silvery, according to Silcon.....	15.40 to 15.65
Southern Coke, No. 1.....	15.15 to 15.40
Southern Coke, No. 2.....	14.40 to 14.65

Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—A slight decrease in activity has been noticed during the past two or three days. There is still a good deal of inquiry for Iron, but large buyers are not disposed to go beyond the very inside figures, and in some instances they intimate that for long delivery they must do still better. In fact the market is disposed to relapse into dullness, and unless some new feature is developed it is likely to drift along for some time without much change in prices. Sales are reported at advanced quotations, as much as \$15.75 being paid for No. 2 X Foundry in some cases, but there is a fair supply of good Iron at \$15. Ordinarily, however, the market stands just about as it did a week ago. In a general way the range may be quoted as follows for city and nearby deliveries, and from 25c. to 50c. less at points within a radius of 100 miles South or West; No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$14.90 to \$15.50; No. 2 Plain, \$14.50 to \$14.75.

PITTSBURGH.—The Iron market is strong and the Bessemer Furnace Association are holding Bessemer Iron firmly at \$15.25, furnace. Foundry Iron is also reported to be firmer and in better demand. We quote No. 2 Foundry Iron at about \$14.25, Pittsburgh.

CINCINNATI.—Orders for Pig Iron have been pouring in and making a large volume of business during the week. There has been a general advance of 50c. a ton on all Southern grades, and on the basis of \$11, Birmingham, for No. 2, the market is strong and steady. Nearly all the tonnage placed is for the first half of next year, and there is a marked scarcity of Foundry grades for shipment this year. There will, in all likelihood, be a continuance of activity for some little time to come. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$14.60 to 15.00
Ohio Silvery, No. 2.....	14.10 to 14.60
Lake Superior Coke, No. 1.....	15.10 to 15.35
Lake Superior Coke, No. 2.....	14.60 to 15.10
Lake Superior Coke, No. 3.....	14.10 to 14.60

ST. LOUIS.—The Pig Iron market has undergone a very material change for the better since last week, and a very brisk demand is now ruling. A general advance of 50c. per ton has been made in all grades by the furnaces. Some say that they have all they can handle to fill their orders for certain grades up to March. A few sales are reported at an advance over the new prices just made. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 2 Foundry.....	14.00 to 14.25
Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

CHICAGO REPORT.

Scrap Iron and Steel.—The volume of business is quite satisfactory. All classes of old material are in fair demand. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$12.00
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.50 to 10.00
Old Gas Pipe and Boiler Tubes.....	11.00 to 11.50
Cast Borings.....	4.25 to 4.50
Turnings.....	9.50 to 10.00
Horseshoes.....	to 13.00

Old Metals.—Copper and Brass are lower, but Zinc is a trifle higher. Trade is moderate. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14½c.
Copper Bottoms.....	13 c.
Copper Clips.....	14 c.

Red Brass.....	13¼c.
Yellow Brass.....	9¼c.
Red Brass Borings.....	11¼c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3½c.
Zinc	2.80c.
Tin Foil.....	22 c.
Pewter, No. 1.....	19 c.
Pewter, No. 2.....	10 c.

Old Rubber.—A fair demand is reported. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$23.00	.....
Alr Brake Hose.....	42.00	.....
Rubber Shoes.....	.....	7½c.
Rubber Car Springs.....	.....	4¾c.
Inside Bicycle Tubing.....	.....	21 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Trade continues active. Better deliveries are now being made by the mining companies and the local supply is therefore in good shape. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

While business continues in excellent volume there is something of a lull in the demand made upon the manufacturers by the jobbing trade, whose requirements for the opening season have been liberally provided for. Reports from the retail trade indicate that trade with them is generally satisfactory, with the prospect that the next few months will be characterized by a large business, especially in holiday goods, a line to which many merchants will give more attention this year than ever before. The scarcity in some lines to which attention has been directed in recent issues still continues, as well as the uncertainty as to the future prices of others in which the formation of consolidations or combinations has resulted in the building up of outside competition, which threatens to become troublesome. The tone of the market, however, all things considered, is satisfactory. The meeting of the National Hardware Association at Cleveland next week is attracting a good deal of attention, as well as the endeavor on the part of a number of well-known manufacturers to form an organization at the same time. Another topic which is much discussed in trade circles is the project for the consolidation of jobbing interests.

NOTES ON PRICES.

Wrought Iron Pipe.—There has been no change whatever during the past week in the quotations on Wrought Iron Pipe. The outlook is that the present costs will be maintained for the next two or three months, and the chances are that mill costs will be held as at present to March of next year. The simple fact that the United States Steel Company are the makers of the Skelp from which the independent Pipe mills make their product is proof that the leading interest can keep matters within their own control.

Plumbers' Brass Work.—It is generally understood that there will be no change whatever in the price of Plumbers' Brass Work in the near future. It is said that some of the leading interests in the manufacturing business have visited the Copper people and have convinced them it would be to the best interests of the Copper dealers and the manufacturers that the price of Copper should remain at 17c. per lb., at least until January 1 next. It is said that many of the large manufacturers of Brass Goods have uncompleted orders on their books which were taken at prices based on Copper selling at 17c., and it would cause the cancellation of a great amount of business and considerable trouble and bad feeling were the price of Copper to undergo any ma-

terial reduction before the time mentioned above. It is a fact worthy of mention that the manufacturers of Brass Goods are not at present soliciting any new business. Whether this is due to their having enough business in hand to satisfy them or because they are waiting for the Copper cat to jump it is not possible to say.

Plumbers' Wood Work.—The scarcity of Tanks and Seats is one of the most remarkable phases of the supply trade in this vicinity. Very few of the jobbing houses are in a satisfactory position with this line. Stocks on hand are low and deliveries from the factories are not at all what they ought to be. Prices remain unchanged, and the prospect is they will continue so until the makers catch up with the demand and are again in a position to look for new business.

Sheet Brass.—Prices of Sheet and Roll Brass are now being held up quite firmly. There is little or no cutting, and the market is steadier than it has been for some time past. The demand is referred to as of good volume.

Copper Wire.—The market on Bare Copper Wire is greatly demoralized by competition. Prices have been cut to a ruinous degree in some cases, notwithstanding that the demand is of quite good proportions.

Registers.—Some of the Register manufacturers announce advanced prices to the smaller trade, quotations being based on the list issued under date September. There is a good deal of irregularity, however, in the quotations made by the manufacturers, and some very low quotations are still current, but the disposition is to obtain better prices in view of the unprofitable prices which have ruled throughout the year.

Wire Nails.—The demand throughout the country for Wire Nails is reported as large. Although manufacturers have increased their facilities they are not making as prompt shipments as the trade desires. In the New York market the demand has fallen off temporarily, which is not unusual at this time. The new tenement law is expected to curtail building operations in this city, and incidentally to affect the local consumption of Nails. Small lots of Wire Nails from store are quoted at \$2.60 per keg.

Cut Nails.—No change in the price of Cut Nails was made by the manufacturers at their meeting last week, but existing prices were reaffirmed. Reports point to some irregularity in prices. The New York Cut Nail market is unchanged in general features, small lots from store being quoted at \$2.18 to \$2.30 per keg.

Wire.—The demand for Wire continues moderately active. The mills are able to ship out their product about as fast as made. The tone of the market is fairly strong, but concessions in prices of Plain Wire are sometimes made for desirable orders and at competitive points. Prices rule at the same figures obtaining for some weeks past—viz., 2.60 cents for Plain Wire in small lots, and 3 cents for Galvanized.

Window Glass.—An improvement in the demand for Window Glass is reported, although it is not large. Stocks are being gradually reduced in jobbers' and manufacturers' hands, and are expected to be pretty well cleaned up by November 1, when factories are scheduled to begin operations. Prices are without change.

Linseed Oil.—The prices of Linseed Oil remain unchanged. Business is confined to small lots, because of the scarcity of Oil and a feeling that prices cannot long be maintained at the present level. It is thought that no relief can be expected, however, before the middle of the month, as it is questioned whether Oil on October contracts will be delivered promptly. City Raw Oil is retailed at 66 to 67 cents per gallon; Boiled Oil is 2 cents per gallon advance on Raw.

White Lead.—The demand for White Lead in Oil is good, if not up to expectations. It is reported that business in this line is in excess of the corresponding period last year. Some irregularity in prices is reported, but no change has been made in retail quotations, which rule at 7 to 7½ cents per pound for moderate sized quantities.

Spirits Turpentine.—The Turpentine market is firm at ruling prices, and only a moderate business is being done in small lots. Retail quantities of Turpentine are being sold at 37½ to 38 cents.

Old Rubber.—A moderate demand is reported. Prices are steady, dealers in New York and vicinity paying about the following figures:

Car Springs, ton lots, per lb.....	4¾c.
Rubber Shoes, less than carloads, per lb.....	7½c.
White Wringer Rolls, per lb.....	7¾c.
Inside Bicycle Tubing, per lb.....	21 c.
Outside Tubing, per lb.....	7¼c.

Cheap Lodging Houses in Milan, Italy.

In a recent report to the State Department, United States Consul William Jarvis, at Milan, Italy, gives a description of a cheap hotel or lodging house after the style of the well-known Rowton Houses in London or the Mills hotels in New York City, which has just been built and opened in Milan. The expense of the building has been provided by a society formed for the purpose. The hotel was opened June 18 and has been in working order for two months. It was at first thought that the majority of those who used it would be men of the laboring classes, but experience so far shows that almost the entire custom comes from the poorer paid clerks, shop assistants and others of that class.

The hotel is restricted to men only. The cost of a room is 10 cents per day, with an extra charge of 2 cents for bed linen, but if taken for a week the cost is 70 cents without the extra charge. There are 530 sleeping compartments, all of the same dimensions—viz., 5 feet 10 inches by 7 feet 6 inches, with divisions between the cubicles and corridor 7 feet 10 inches high, leaving a space of 2 feet between the division and the ceiling. Each room has a window 5 feet by 1 foot 10 inches. The furniture consists of a bed, chair and clothes pegs. Electric light is provided for use during the time for dressing and undressing. The floors of the bedrooms are made of cement, and all the partitions are enameled hollow cemented bricks. The whole edifice is heated by means of hot air pipes, and excellent sanitary arrangements are located on each floor. The bathrooms are open night and day for the use of the inmates, a complete bath costing 4 cents, while a shower bath can be taken for 2 cents. On the basement floor, near the bathrooms, are wash stands, consisting of marble slabs, in which the basins are fixed. Each basin has a hot and cold water tap and a discharge pipe underneath. A laundry is also provided in the basement. Access to the bedrooms is only allowed from 7 p.m. to midnight, and the lodgers are expected to leave the rooms not later than 9 o'clock in the morning. No personal possessions are permitted to be left in the rooms, store closets with separate keys being provided for each guest, where he may deposit all his clothing or other belongings.

The building is of five stories and basement, and the roof forms an extensive terrace. The architecture is described as simple but in good taste. In addition to the sleeping compartments there are large rooms reserved for dining, reading and smoking. All these rooms are lighted by electricity, the dining room being a particularly attractive apartment. To the dining room are joined two large kitchens with heat always ready. Each lodger is permitted to buy his own provisions outside and use the kitchens, the hotel providing the necessary cooking utensils. If desired, however, food may be bought ready prepared at the hotel at the cheapest possible price. The men may also do their own laundry work or have it done for them in the house at a fixed price.

LUND COMPANY have lately opened up in business at Cœur D'Alene, Idaho, and are carrying a stock including Hardware, Stoves, Tinware, Sporting Goods, Agricultural Implements, Buggies, Wagons, Harness, &c. They also have a plumbing department.

Richard A. Donaldson, for 25 years a member of the firm of Glina & Co., manufacturers of decorated tin-

ware in New York City, died on September 29 at his home, 97 Joralemon street, Brooklyn, N. Y. Mr. Donaldson was born in Brooklyn and lived there all his life. He had recently returned from an extended tour of Europe.

A letter from Lieutenant Peary, just published, shows that he succeeded in reaching a point further north than any other explorer who has worked on this side of the globe. But more important than this is the fact that he accomplished the mapping of the northern coast of Greenland. He found that the great island did not extend nearly as far north as had been supposed. Lieutenant Peary stays north another year.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED OCTOBER 4, 1901.

Aluminum— No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting, 37¢ Small lots, 35¢ 100-lb lots, 35¢ Aluminum Sheet, B. & S. gauge, in lots of 50 lbs or more, 14-in. 24-in. 30-in. Wider than 6-in. 14-in. 24-in. 30-in. And including, 14-in. 24-in. 30-in. Nos. 18 to 19, \$0.42 \$0.44 \$0.47 " 20, .44 .46 .49 " 21 to 23, .46 .48 .51 " 24, .47 .50 .53 " 25, .47 .51 .54 " 26, .47 .51 .59 " 27, .48 .57 .62 " 28, .48 .57 .64 " 29, .49 .60 .69 " 30, .50 .64 .77 Note.—Lots of less than 50 lbs 5¢ lb extra. Antimony— Cookson, 10¢ lb, 10¢ lb Hallett's, 8¢ lb, 8¢ lb U.S., 8¢ lb, 8¢ lb Brass, Roll and Sheet, 15¢ 20¢ Conductors— Corrugated. Round or Square.— Galvanized 1/2 or more, N's't'd, 70¢ 5¢ " Not Nested, 70¢ 2 1/2¢ " Plain Round, 1/2 or more, 70¢ 5¢ Nested, 70¢ 5¢ Galvanized, Plain Round, Not Nested, 70¢ 2 1/2¢ Spiral Riveted. Galvanized, 40¢ See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor. Conductor Strainers— See Strainers, Conductor. Copper— Late Ingot, 17 1/2¢ 17 1/2¢ Casting, 16 1/2¢ 17¢ Sheet and Bolt, 21¢ lb basis Cold Rolled Sheets, 22¢ lb basis Cold Rolled and Polished Sheets, 23¢ basis Planished Sheets, 24¢ basis Bottoms, Pits and Flats, 25¢ basis Eave Trough, Galvanized Territory, L. C. L. Eastern, 75¢ 10¢ Central, 75¢ 7 1/2¢ Southern, 70¢ 12 1/2¢ S. Western, 70¢ 10¢ Terms, 2% for cash. Eave Trough Miters— Lap or Slip Jolt, 11¢, 25¢ Elbows—Plain Adjustable— Eastern List. Tin, 30¢ Galvanized, 30¢ " Perfect " Elbows, 40¢ Stove Pipe— Four-Piece No. 1, 40, 80, 85, 90, 1.00, 1.05 per doz. No. 2, .65, .70, .75, .80, .85 No. 3, .60, .68, .65, .70, .80 Elbows and Shoes— Galvanized, 60¢ Gasoline— See Petroleum Products. Iron, Sheet—Black. One Pass, C. R., R. G. Soft Steel, Cleaned. Nos. 14 to 16, 3.80, 3.85¢ Nos. 18 to 21, 3.90, 3.95¢ Nos. 22 to 24, 4.00, 4.05¢ Nos. 25 and 26, 4.10, 4.15¢ No. 27, 4.20, 4.25¢ No. 28, 4.30, 4.35¢ Russia, Planished, &c. Genuine Russia, accord- ing to assortment, 11¢ 11 1/2¢ Do. Stained, 6¢ 10¢ Patent Planished, 11¢ A, 12¢ B, 11¢ net Galvanized. Nos. 10 to 16, 12¢ 12 1/2¢ Nos. 17 to 21, 13¢ 13 1/2¢ Nos. 22 to 24, 14¢ 14 1/2¢ Nos. 25 to 26, 15¢ 15 1/2¢ No. 27, 16¢ 16 1/2¢ No. 28, 17¢ 17 1/2¢ No. 29, 18¢ 18 1/2¢ No. 30, 19¢ 19 1/2¢ 36 in. 1¢ lb higher. Lead— American Pig, 4.62¢ 4.75¢ Bar, 5¢ 5 1/4¢ Pipe, 6 1/4¢ 2 1/2¢ off Tin Lined Pipe, 12 1/2¢ 20¢ off Block Tin Pipe, 37¢ 20¢ off Sheet Lead, full rolls, 7 1/4¢ 20¢ off Sheet Lead, cut, 7 1/2¢ 20¢ off Old Lead in exchange, 1¢ lb. Mitres, Eave Trough— See Eave Trough Mitres. Nickel— Per lb, 60¢ 65¢ Paints, Oils, &c.— Leads— Lead, American White, in Oil; Lots of 500 lb or over, 6 1/2¢ Lots less than 500 lb, 7¢ Lead, White, in oil, 25 lb tin pails, add to keg price, 1¢ Lead, white, in oil, 12 1/2 lb tin pails, add to keg price, 1¢ Lead, white, in oil, 1 to 5 lb as- sorted tins, add to keg price, 1 1/2¢ Lead, white, Dry in bbls, 5 1/4¢ 6¢ Lead, Red, bbls, 1/2 bbls. and kegs: Lots 500 lb or over, 6¢ Lots less than 500 lb, 6 1/2¢ Oils— Linseed, City, raw, 65¢ 66¢ Linseed, City, boiled, 67¢ 68¢ Linseed, State and West'n, raw, 65¢ 66¢ Spirits Turpentine— In Southern bbls, 36 1/4¢ 36 1/2¢ In machine bbls, 36 1/4¢ 37 1/4¢ Putty— In bulk, \$1.25 In bladders, 2.25 In cans 12 lb to 25 lb, 2.25 In cans 1 lb to 5 lb, 3.25 Petroleum Products— In Barrels (Barrel Included) Stove Gasoline, 12 1/2¢ 13¢ Kerosene, 13¢ 13 1/2¢ Pipe, Drain— 40¢ Pipe, Spiral— See Conductors. Registers— List Sept. 2, 1901. Black Japanned, 60¢ 10¢ 60¢ 10¢ 10¢ White Japanned, 60¢ 10¢ 60¢ 10¢ 10¢ Nickel Plated, 60¢ 10¢ 60¢ 10¢ 10¢ Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze, 60¢ 10¢ 60¢ 10¢ 10¢ Electroplated in Brass, Bronze or Copper, 60¢ 10¢ 60¢ 10¢ 10¢ White Porcelain, 60¢ Solid Brass and Bronze Metal, 50¢ Roofing Material— 1 Ply Tarred Paper, 26¢ 00¢ 27.00 2 Ply Tarred Paper, 108 sq. ft. 40¢ 50¢ 3 Ply Tarred Paper, 108 sq. ft. 60¢ 70¢ Slater's Felt, roll 500 sq. ft., 50¢ 60¢ Roofing Pitch, bbl, 2.35 Rosin— Common and Good—Strained. Rosin, C. & D., bbl, \$1.40 @ \$1.42 Rosin, E. & F., bbl, 1.55 @ 1.65 Rosin, G. & H., bbl, 1.70 @ 1.75 Rosin, I. & K., bbl, 1.80 @ 2.15 Rosin, M. & N., bbl, 2.60 @ 3.15 Shoes and Elbows— See Elbows and Shoes. Slate Roofing— f. o. b. cars, Quarry Station. According to size. Pennsylvania: Best Bangor, 3 sq., \$3.25 @ \$1.50 No. 1 Bangor Ribbon, 3 sq., 3.00 @ 3.50 Pen Argyle, 3 sq., 3.00 @ 3.75 Peach Bottom, 3 sq., 4.85 @ 5.60 No. 1 Boys, 3 sq., 3.35 @ 3.55 No. 1 Chapman Keystone, 3.25 @ 4.25 Vermont: Sea Green, 3 sq., \$2.00 @ \$3.00 Purple, 3 sq., 3.75 @ 4.25 Unfading Green, 3 sq., 3.25 @ 4.50 Red, 3 sq., 6.50 @ 11.00 Maine: Brownville, Unfading Black: No. 1 quality, \$5.25 @ 7.50 No. 2 quality, \$4.25 @ 6.00 Solder— 1/2 lb guaranteed, 18 1/2¢ 19¢ No. 1, 15¢ 17¢ Prices of Solder indicated by private brands vary according to composition. Soldering Fluids— Per Pound. Smaller Barrels Q'tities Concentrated Flux, 4¢ 5¢ Eureka Flux: Triple Strength, 3¢ 3 1/2¢ Extra Concentrated, 4 1/2¢ 5¢ Crystal, 7¢ Gedney's Fluid, 2¢ Lennox Fluid, 2¢ Perfection Flux, 3¢ 3 1/2¢ 4¢ Yager's Salts, 1 lb. bottles, each, 60¢ 5 lb. bottles, per lb., 40¢ Soldering Coppers— Per lb, 22¢ 24¢ Spelter— Western Spelter, 4.45¢ 4 1/2¢ Spiral Pipe— See Conductors. Stove Pipe Elbows— See Elbows, Stove Pipe. Stove Trucks— See Trucks, Stove. Strainers, Conductor— Galvanized, 50¢ Tin Pigs and Bars— Sanca, pigs, 26 1/2¢ 27¢ Straits, pigs, 26 1/2¢ 27¢ Straits, in bars, 27 1/4¢ 27 1/2¢ Tin Plates, American Charcoal Plates, Bright— N. B.—The price of 20 x 28 sizes is double the price of 14 x 20. Calland Grade: IC, 14 x 20, \$7.75 IX, 14 x 20, 9.25 IXX, 14 x 20, 10.50 IXXX, 14 x 20, 11.75 IXXXX, 14 x 20, 13.00 Melyn Grade: IC, 14 x 20, 7.25 IX, 14 x 20, 8.75 IXX, 14 x 20, 10.00 IXXX, 14 x 20, 11.25 IXXXX, 14 x 20, 12.50 Allaway Grade: IC, 14 x 20, 6.75 IX, 14 x 20, 7.85 IXX, 14 x 20, 8.95 IXXX, 14 x 20, 10.05 IXXXX, 14 x 20, 11.15 Coke Plates, Bright— Bessemer Steel, or equal to J. IO, 14 x 20, \$7.00 @ 7.15 B. Grade, full weight, IX, 14 x 20, \$7.50 @ 7.75 N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows: 100 lb, 15¢ 95 lb, 20¢ 90 lb, 25¢ 85 lb, 30¢ Terne Plates— N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward. About 40 lb coating, \$17.50 @ 18.00 About 40 lb coating, 16.75 @ 17.25 About 20 lb coating, 14.75 @ 15.25 About 15 lb coating, 12.75 @ 13.25 About 8 lb coating, 12.00 @ 12.00 Boiler Plates, American— IXX, 14 x 26, (112 sheets), \$16.00 IXX, 14 x 28, (112 sheets), 17.00 IXX, 14 x 31, (112 sheets), 18.50 Troughs, Eave— See Eave Trough. Trucks, Stove— Improved Look Frame, per doz., \$15.00 Steel Look Frame, per doz., 18.00 Daisy Improved pattern, 18.00 Tubes and Tubing— Braze i Brass, List Feb. 26, 1896, 30¢ 35¢ Copper and Bronze, 3¢ per lb. list more than B. 8A. Seamless Brass Tubes, net list Feb. 6, 1899. Tin, 50¢ Galvanized, 50¢ Fittings for do., 40¢ Zinc— 600 lb casks 7¢ lb Per lb, 7 1/4¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized— Standard Boilers: 30 gal., 65¢ 10¢ 70¢ 35 and 40 gal., 65¢ 6 1/2¢ 10¢ Other sizes up to 52 gal., 60¢ 60¢ 10¢ 52 gal. and above, 60¢ 60¢ 10¢ Extra Heavy Boilers: 18 to 52 gal., 50¢ 10¢ 60¢ 53 gal. and above, 50¢ 55¢ Brass Work, Plumbers'— List of December 7, 1896. Compression: Basin C cks., 65¢ 65¢ 5¢ Bath Cocks and Double Bath Cocks, 65¢ 70¢ Blbs., 65¢ 65¢ 5¢ Blbs, Flanged, 65¢ 70¢ Fuller: Blbs., 70¢ 70¢ 10¢ Basin Cocks Nos. 1 to 4, 70¢ 10¢ 75¢ Bath Cocks, No. 4, \$2.00 net Ground Key Work: Finished Blbs., 60¢ 65¢ Rough Blbs and Stops, 65¢ 70¢ Rough Stop and Stop and Waste Cocks, 70¢ 70¢ 5¢ Rough Stop and Stop and Waste Cocks, Patent, 65¢ 65¢ 5¢ Miscellaneous— Basin Clamps, 60¢ 65¢ Basin Plugs, 60¢ 65¢ Chain Stays, 60¢ 5¢ 70¢ Iron Boiler Couplings: Lead Pipe, Iron Pipe. Plain Face, 1/2 set, \$0.95 \$1.05 Ground Face, 1/2 set, \$1.00 \$1.10 Sink or Bath and Wash Tray Flings, 60¢ 65¢ Soldering Nipples, 70¢ 5¢ 75¢ Soldering Unions, 70¢ 5¢ 75¢ Union Elbows, Hot Water Heating, 70¢ 75¢ Cocks, Valves, &c.— Cocks— Brass— Air and Radiator Air, 70¢ 70¢ 5¢ Gas Meter and Union Meter, 65¢ 65¢ 10¢ Steam, 65¢ 65¢ 10¢ Iron— All Iron, 65¢ 70¢ Iron with Brass Plugs, 60¢ 65¢ Valves— Brass— Garden Hose, 65¢ 10¢ 70¢ Gate, 65¢ 65¢ 10¢ Globe and Angle, hose outlet, 65¢ 65¢ 10¢ Globe, Angle and Cross, 65¢ 65¢ 10¢ Horizontal, Vertical and Angle Check, 60¢ 65¢ Hot Water Radiator, 65¢ Radiator, 65¢ 70¢ Safety, 55¢ Safety, Low Pressure, 55¢ Jenkins' Disc, 60¢ Check, 60¢ Gate, 60¢ Globe, Angle and Cross, 60¢ Radiator, 60¢ Radiator, Corner, 65¢ Safety, 50¢ Iron— Iron Body, 70¢ 70¢ 5¢ Foot, 70¢ 70¢ 5¢ Jenkins Bros., 40¢ 5¢ All Iron, except Gate, 35¢ 41¢ All Iron Gate, 35¢ 41¢ Iron Body, except Gate, 60¢ Iron Body Gate, 60¢ 50¢ 55¢ Swing Check, 50¢ Earthenware— Brown Glazed, 20¢ Porcelain, List of Aug. 15, 1901: Basins, Urinals and Hoppers, A, 30¢ Closet Bowls, Sundries, Wash- outs and Pedestals, B, 40¢ C, 50¢ Fittings— Brass Fittings— Finished, 65¢ 70¢ Rough, 65¢ 70¢ Bushings, 65¢ 70¢ Nipples, 70¢ Unions, Rough and Finished, 70¢ 70¢ 5¢ Iron— List of Oct 7, 1899. Cast Iron Fittings, Black and Galva- nized, Standard sizes, 60¢ 10¢ 70¢ Cast Iron Bushings and Plugs, 65¢ 75¢ Cast Iron Flanges, 65¢ 75¢ Cast Iron Floor Flanges, 65¢ 75¢ Malleable Iron Fittings, 50¢ 55¢ " Bushings, 65¢ 5¢ 70¢ " Unions, 70¢ 70¢ 10¢ Unions, Flange, 60¢ 60¢ 10¢ Wrought Iron Nipples, 65¢ 70¢ " Couplings, 60¢ 65¢ " Long Screws, 65¢ 70¢ Pipe Hangers, Universal, 50¢ Lavatories— Porcelain Enameled Iron, 30¢ Oakum— Plumbers' Oakum, 50 lb. bales, 2 1/2¢ Pipe— Brass, Iron Pipe Size: 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 32, 36, 40, 48, 54, 60, 72, 84, 96, 108, 120, 144, 168, 192, 216, 240, 270, 300, 324, 360, 400, 450, 480, 540, 600, 660, 720, 780, 840, 900, 960, 1080, 1200, 1320, 1440, 1560, 1680, 1800, 1920, 2160, 2400, 2700, 3000, 3240, 3600, 4000, 4500, 4800, 5400, 6000, 6600, 7200, 7800, 8400, 9000, 9600, 10800, 12000, 13200, 14400, 15600, 16800, 18000, 19200, 21600, 24000, 27000, 30000, 32400, 36000, 40000, 45000, 48000, 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THE METAL WORKER.

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Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A first-class PLUMBER and STEAM FITTER who is good on residence work and hot water heating. West Virginia Heating & Plumbing Company, Charleston, W. Va. Oct. 5

We want to engage a good all round RETINNER; state experience and salary expected. "C. D. J." care of *The Metal Worker*, Hamilton Building, Pittsburgh, Pa. Oct. 5

As CUTTER and FOREMAN in sheet metal department for a steam heating concern; one capable of estimating preferred; permanent place. "Steam Heating," care *The Metal Worker*, New York. Oct. 5

Two all around TINNERS, with some knowledge of furnace work, wanted at once; steady work; state wages expected and if can come at once. Greensburg Hardware & Supply Company, Greensburg, Pa. Oct. 5

A first-class man to work on greenhouse pipes; neat joints. James J. Lynch & Co., 11 Mill street, Newport, R. I. Oct. 5

At once, a good sober, strictly first-class TINNER; one capable of doing inside and outside tin and galvanized iron work; must be experienced in cornice and furnace work; good wages to the right man. Knapp Hardware Company, Mason City, Iowa. Oct. 5

A factory FOREMAN for refrigerator plant; a good man with original ideas to take charge of tin department; only steady and reliable man need apply. Box 150, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Oct. 5

A PLUMBER and STEAM FITTER; reliable and sober; a recent graduate of New York or equal trade school desirable. "N.," East Hampton, N. Y. Oct. 5

A good general jobber in plumbing, tinning, &c.; steady job to a good mechanic; wages, 25 cents per hour. Apply immediately to Mabie & Son, 46 Water street, Newburgh, N. Y. Oct. 5

Two PLUMBERS; \$2.50 a day. Hoiles & O'Donnell, Cranford, N. J. Oct. 5

Good fair PLUMBER and TINSMITH; state wages wanted. Bodine & Davis, Bellows Falls, Vt. Oct. 5

First-class TINSMITH at once; state wages wanted. Bodine and Davis, Bellows Falls, Vt. Oct. 5

A first-class PLUMBER and GASFITTER; none but first-class and sober man need apply; wanted at once. Conover E. White, Atlantic Highlands, N. J. Oct. 5

At once, a good all round TINSMITH and METAL WORKER; one who understands furnace work, roofing, plumbing, and work generally done in a country shop; state age and wages expected. Callanan Bros., Keeseville, N. Y. Oct. 5

At once, a STEAM and HOT WATER FITTER; one who understands plumbing; to a competent and reliable man a steady job will be given; state wages expected and experience. E. A. Burbank, Berlin, N. H. Oct. 5

At once, a competent and reliable man as PLUMBER AND STEAM and HOT WATER FITTER; to the right man I have a steady job the year round; state wages expected and experience. E. A. Burbank, Berlin, N. H. Oct. 5

Two first-class STOVE PATTERN MAKERS and one first-class CARVER; steady employment and good wages paid to good reliable men; shop one of the best equipped in the country. Richmond Pattern Works, Richmond, Va. Oct. 5

A first-class general man; one who can do plumbing, steam and hot water heating, also tinning and furnace work; do estimating in the several branches; in good sized town; steady employment and good wages; married man preferred. Address "M. N. O.," care *The Metal Worker*, New York. Oct. 5

A man with sufficient experience in the stove business to assume the management of the sales department of a reputable manufacturing establishment; state present employment, character and duration of past experience and general fitness to fill position indicated. Communicate with "Experience, 928," care *The Metal Worker*, New York. Sept. 28

A first-class man, thoroughly conversant with the cornice and roofing business; must be able to figure all work usual to a shop of this kind and to get business. "W. R. C.," care *The Metal Worker*, New York. Sept. 28

Wanted at once, several competent union PLUMBERS and TINNERS; preference to men who can handle both lines. G. E. Adams & Co., Glens Falls, N. Y. Sept. 28

Wanted, a TINSMITH and JOBBER for country shop with some knowledge of steam beating and plumbing; must be sober and honest and willing to look after store at times; steady work the year around; living cheap; give references and wages wanted. Wm. C. Cook, Branchville, N. J. Sept. 28

To correspond with thoroughly experienced SUPERINTENDENT of soil pipe foundry with a view to his employment. "Soil Pipe," care *The Metal Worker*, New York. Sept. 28

Wanted, two good TINNERS who understand hot air furnace work and general jobbing; steady job for good men, eight hours and good wages; come at once. Geo. Rome & Co., Carnegie, Pa. Sept. 28

A first-class PLUMBER and GAS FITTER; must be strictly sober; permanent position. E. F. Broderick, Savannah, Ga. Sept. 28

SLATERS and TINNERS; two good men immediately; state experience and wages wanted or apply in person to Blowers & Smith, 252 West Main street, Springfield, Ohio. Sept. 28

Two TINSMITHS wanted at once; accustomed to furnace work, roofing and general jobbing; in country shop; none but experienced, reliable and sober men need apply; steady position to right party. Call at once or address Fowler & Sellars, White Plains, N. Y. Sept. 28

GENERAL SUPERINTENDENT and FOREMAN; must be thoroughly competent and reliable, a good handler of men, all around hustler, first-class mechanic and good designer for mechanical department in wrought iron novelty and sheet metal works; applicants should state fully experience, with reference and salary expected; growing position for the right man. "Manufacturer," P. O. Box 175, Cincinnati, Ohio. Sept. 28

Thoroughly competent SCROLL WORKERS and FINISHERS in wrought iron novelty and sheet metal works; first-class mechanics need only apply. "Manufacturer," P. O. Box 175, Cincinnati, Ohio. Sept. 28

Energetic boy of 16 or 17 years of age, with good common school education, who wants to learn the trade of tinning and plumbing; no cigarette smokers or drinkers wanted. Address in own handwriting, L. N. Hoover, Milroy, Pa. Sept. 28

STEAM FITTER, also good TINSMITH. Apply to Mills & McClintock, rear 22 Main street, Haverhill, Mass. Sept. 28

SALESMEN wanted; high class, intelligent men with experience in selling to both jobbers and retailers, to handle a long line of stoves, gasoline goods and metal ware for a prominent manufacturer. "Long Line," care *The Metal Worker*, New York. Sept. 28

Two strictly first-class SHEET IRON and TIN WORKERS. Apply at once to John H. Taylor & Bro., 219 Glen Ridge avenue, Montclair, N. J. Sept. 28

A competent man to take general supervision of the manufacturing departments of a well established stove foundry; state past experience, present employment and qualifications for position. "Foundryman," care *The Metal Worker*, New York. Sept. 28

A first-class TINNER with experience on coffee urn work; none other need apply; steady work. "Tinner," Room 305, 306 Bell Block, N. E. corner Sixth and Vine streets, Cincinnati, Ohio. Sept. 28

TIN ROOFERS; first-class men only; steady work, highest wages. Meade Roofing & Cornice Company, 3717 Filbert street, Philadelphia. Sept. 28

First-class PLUMBER and GAS FITTER, one with license preferred, to take charge of an established shop; must furnish A1 references; permanent position to right party; no capital required. "Manhattan," care *The Metal Worker*, New York. Sept. 28

At once, a PLUMBER and TINSMITH; will pay \$2.50 per day to a good sober man that can do my work; come at once. Geo. W. Gibney, Pawling, N. Y. Sept. 28

Several good CORNICE MAKERS to begin work at once. Apply to Hugh C. Lendrim, 82 Clay street, Paterson, N. J. Sept. 28

SITUATIONS WANTED.

A man that understands plumbing and tinning and can do the work, would like a position. John Miller, Northampton, Mass. Oct. 5

PLUMBER, with license, also used to roofing and furnace work, city or country, desires steady position; best of reference. George Harvey, Elmhurst, Long Island. Oct. 5

COST FIGURER and General OFFICE MAN, eight years with present employer, one of the largest tinware manufacturers East, wishes to change for similar position. "Capable," care *The Metal Worker*, New York. Oct. 5

A competent hardware and stove man; position as MANAGER or SALESMAN in hardware or stove or mill supply or house furnishing, or similar lines; over 15 years' experience; wholesale or retail, or road; all kinds of tools; road experience in several lines. "H. Push," care *The Metal Worker*, New York. Oct. 5

PLUMBER.—Young man, 24, junior; A1 mechanic, would like position near by town. John Dietz, 944 Tinton avenue, New York. Oct. 5

A STOVE PATTERN MAKER with 25 years' experience; able to carve and design the latest style of ornamentation and competent to get up new work and understand the construction of stove patterns in all its details, desires position in stove works. A. E. Gebhardt, 426 Fourth avenue, N. E., L. Troy, N. Y. Oct. 5

By PLUMBER and GAS FITTER of several years' experience; also has had considerable experience at tin and sheet iron work and steam and hot water fitting; am strictly temperate; married, and 30 years of age. "Plumber," 123 Park Place, Waverly, N. Y. Oct. 5

JAPANNER, who understands all branches of the business, desires position as foreman; familiar with registers, steel furniture, gasoline stoves, bicycles and all kinds of tin, wood and sheet iron enameling; can furnish first-class references. George Fisher, Floyd's Kuobs, Ind. Oct. 5

PLUMBER, GAS, STEAM and HOT WATER FITTER wants a steady position in charge; able to estimate, manage mechanics, lay out the work; thoroughly competent on sanitary work, the general construction of heating or power work; experienced; understands plans and specifications; references. "Steady 105," care *The Metal Worker*, New York. Oct. 5

As FOREMAN in cornice and skylight works. "G. H. W.," care *The Metal Worker*, New York. Sept. 28

Young man, 32, reliable and honest, would like work in tin and sheet iron shop; general jobbing; nine years with last employer; references. Wm. Schulz, 331 East Thirtieth street, New York. Sept. 28

A good first-class TIN ROOFER and JOBBER, with HELPER, would like an out of town position where there is work all winter round. John Steffens, 47 Millford street, Brooklyn, N. Y. Sept. 28

As STOVE and RANGE SALESMAN, by a young man thoroughly versed in the business; both manufacturing and road experience; can furnish best of references. "Stoves and Ranges," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Sept. 28

Permanent position by a strictly first-class all around TIN and SHEET IRON WORKER; range, heater and expert hot air furnace hand; good general in and outside worker on any class of work; can cut patterns, manage shop and handle men to advantage. Wm. Carroco, 723 West Mulberry street, Baltimore, Md. Sept. 28

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A TRAVELER in West Virginia calling on the hardware and stove trade wants to sell on commission a line of stoves and specialties. Box 145, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 28

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As CUTTER or WORKING FOREMAN in cornice shop by one who understands cutting and estimating and can handle men to advantage. "B. S.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Sept. 28

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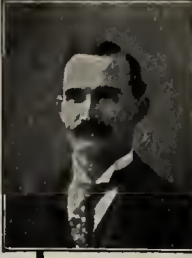
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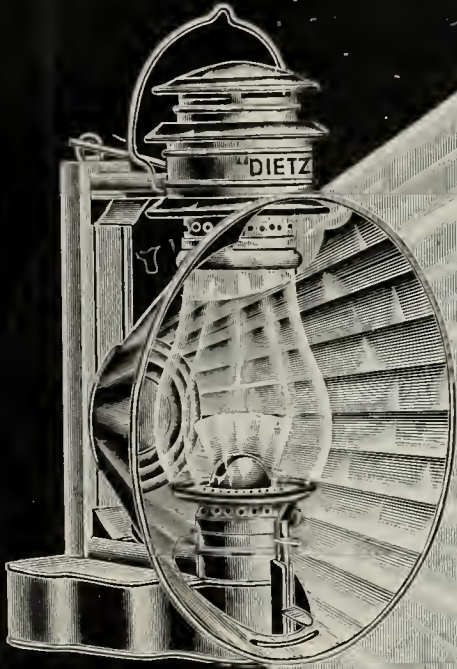
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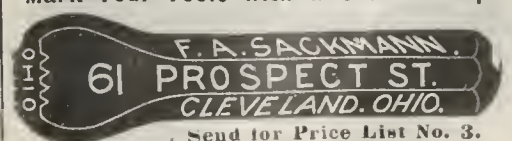
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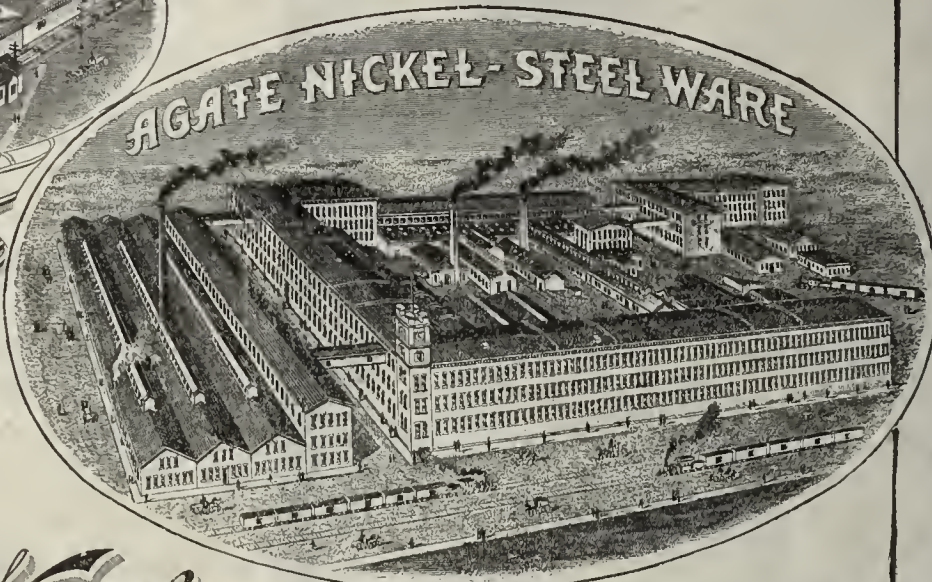
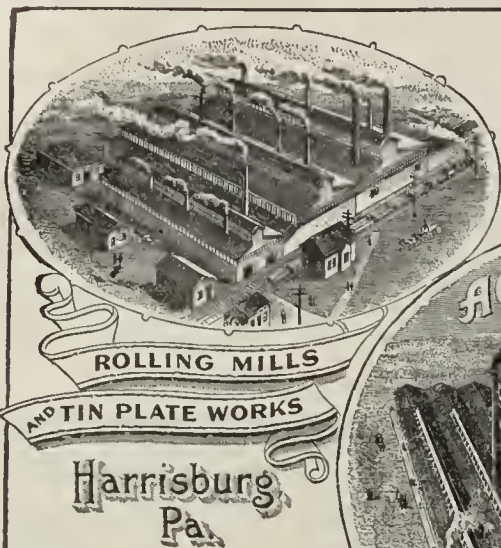
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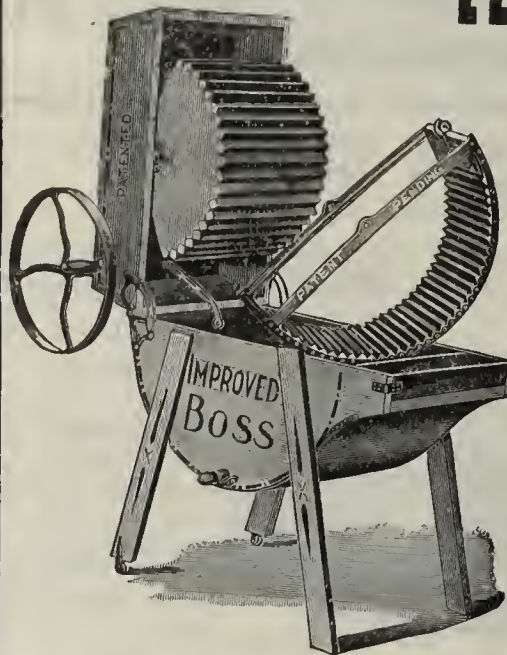
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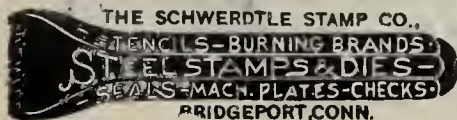
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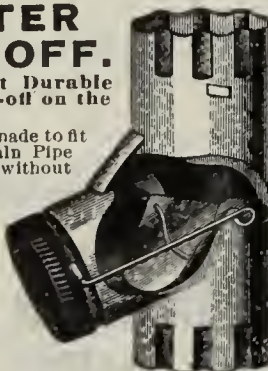
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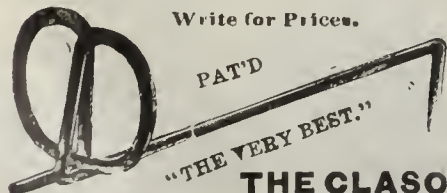
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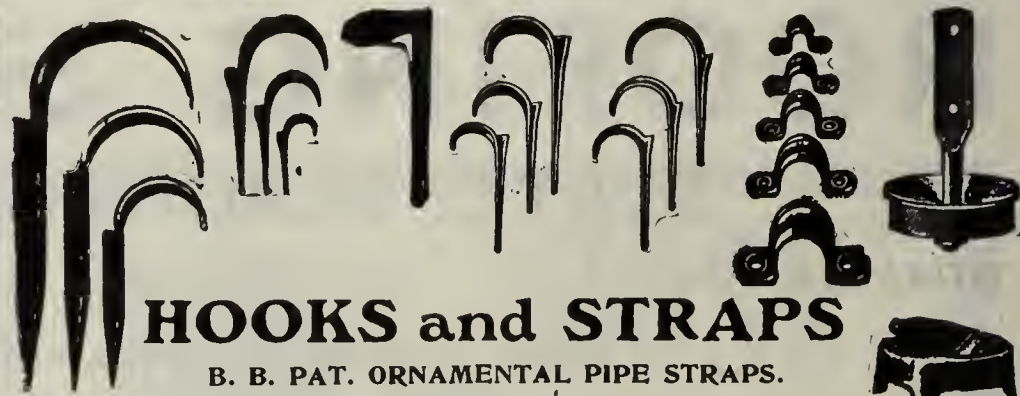
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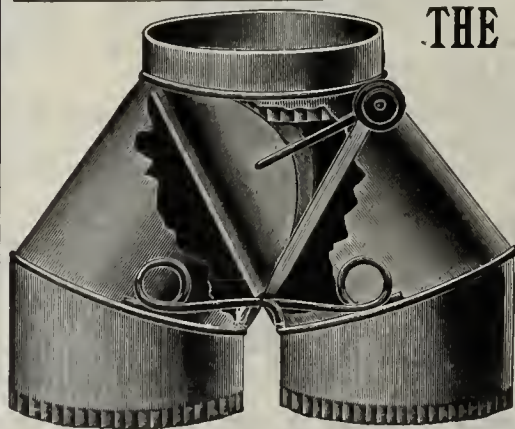
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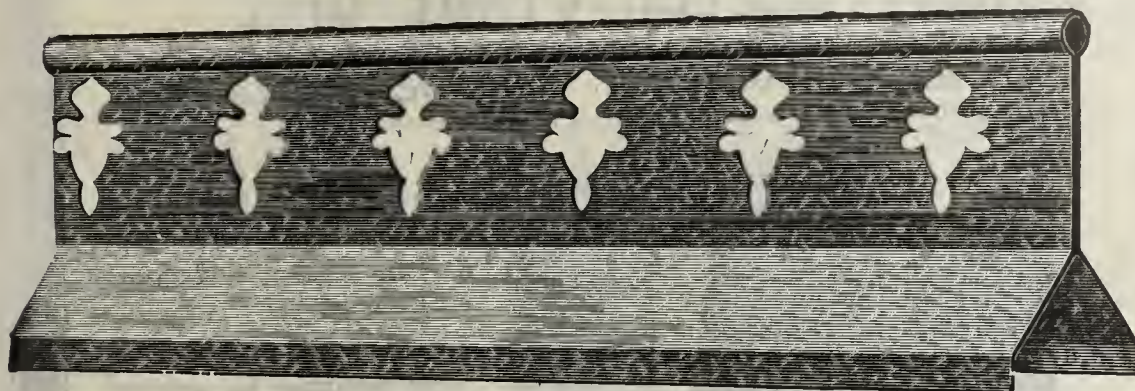
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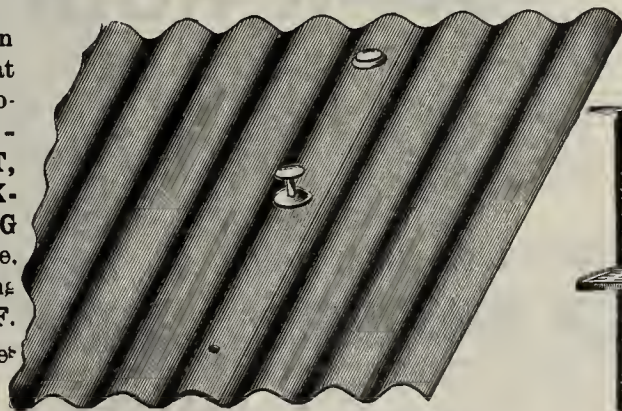
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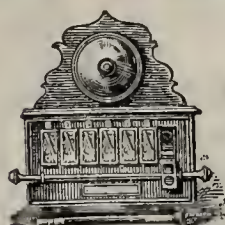


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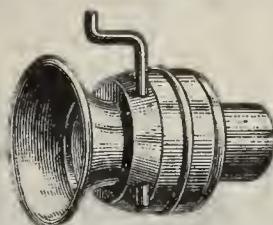


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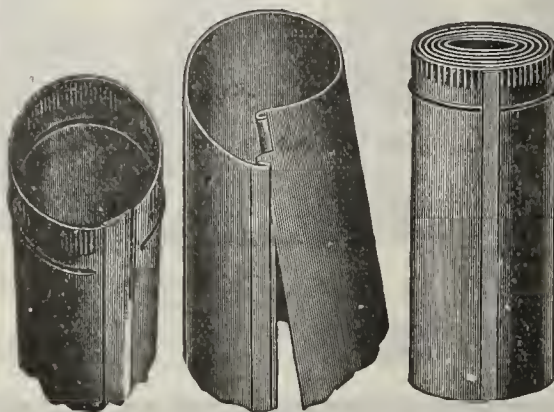
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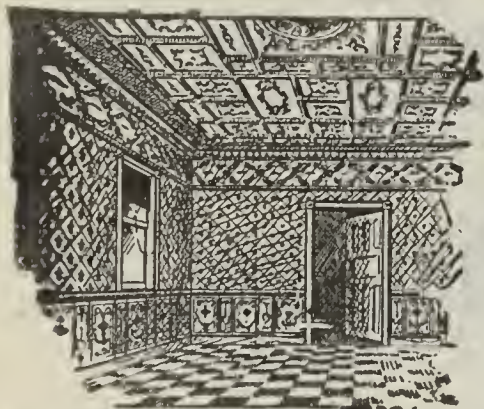
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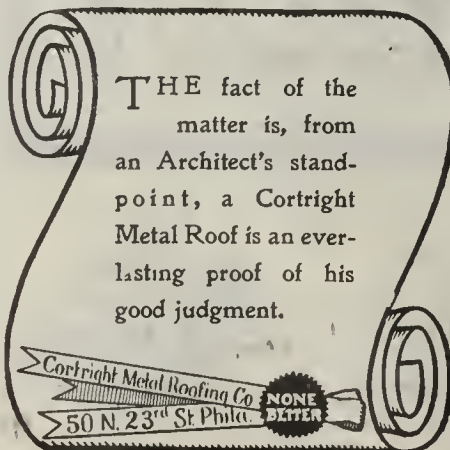
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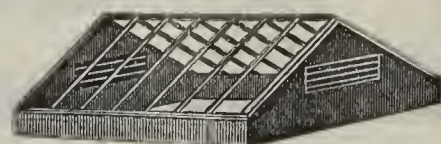
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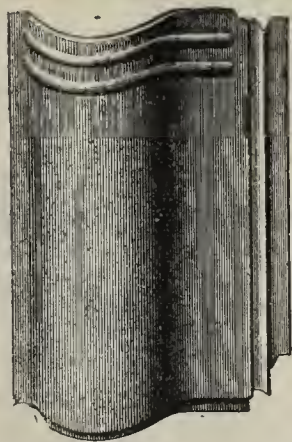


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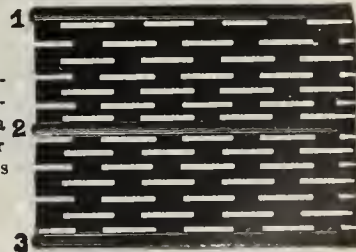
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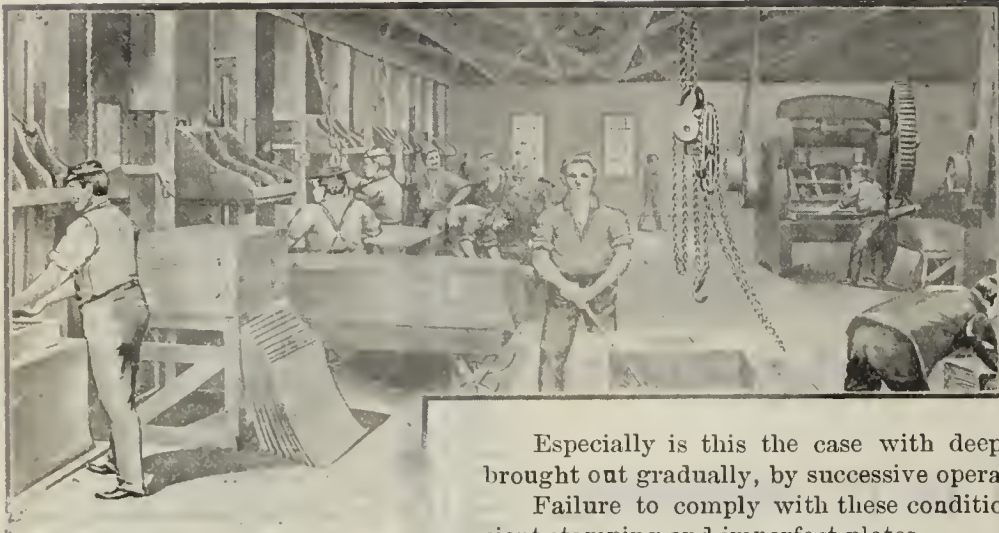
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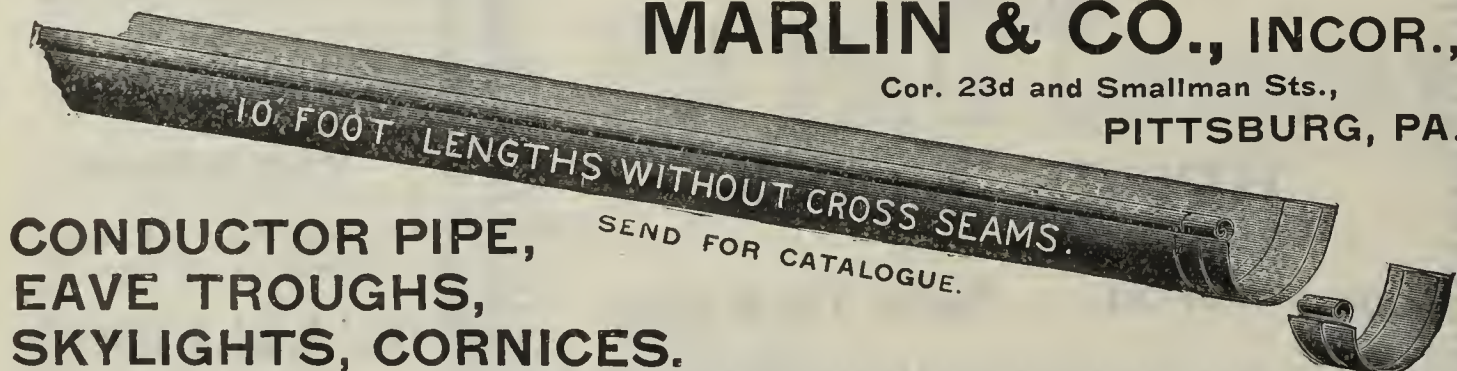
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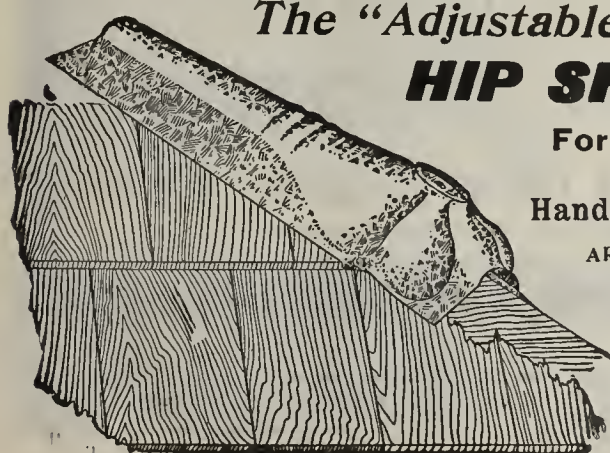
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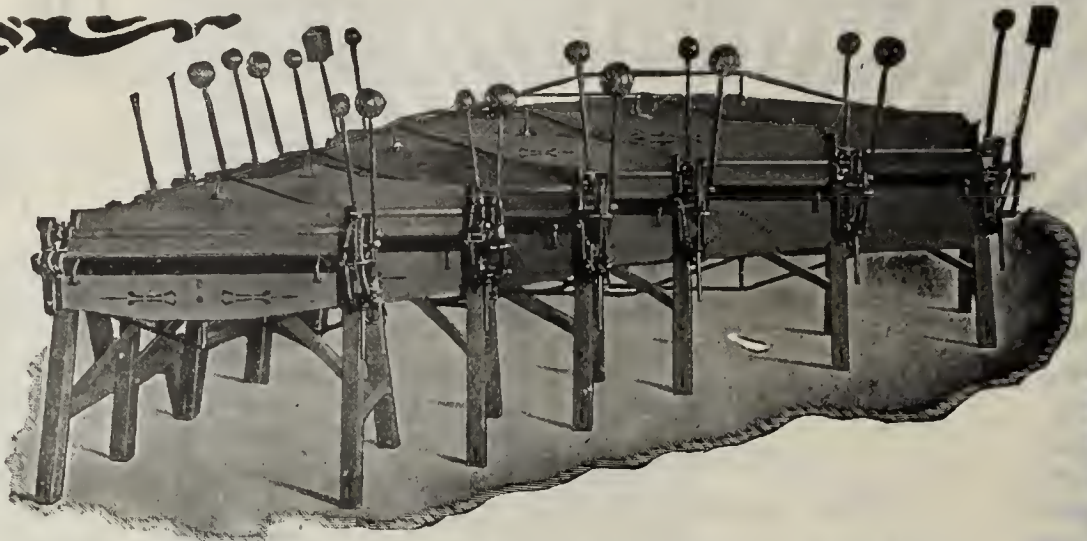
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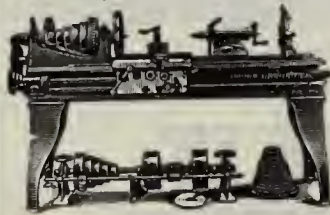
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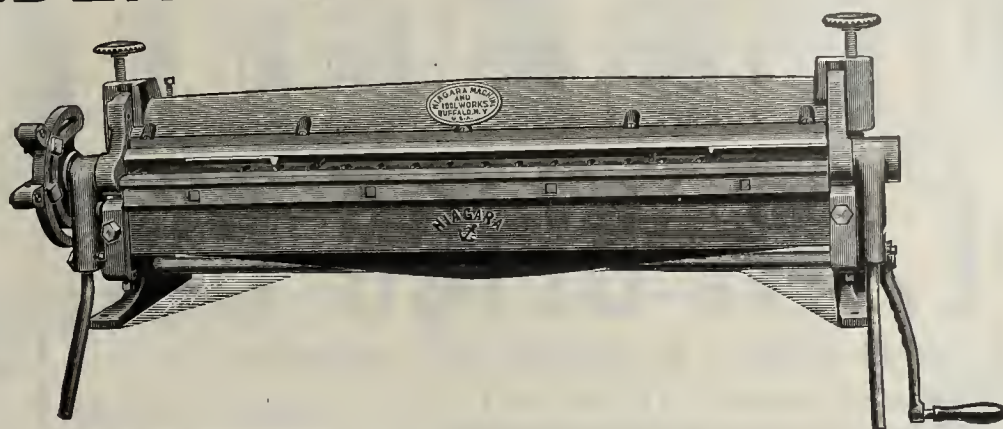
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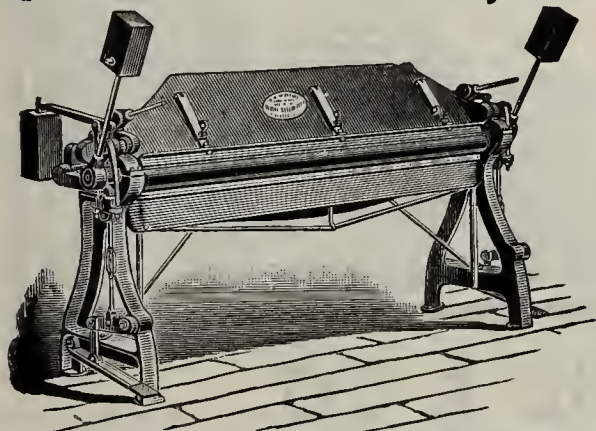
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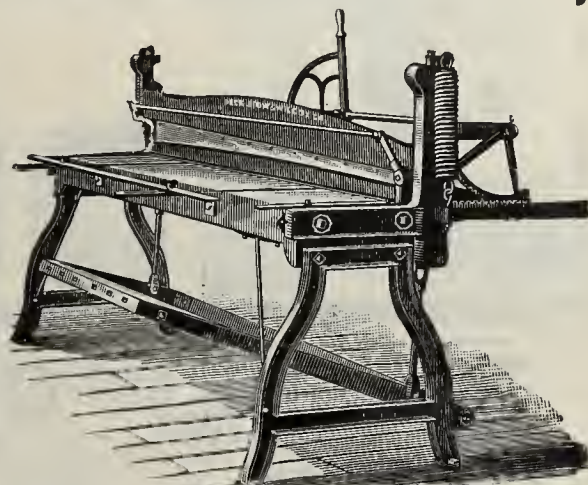


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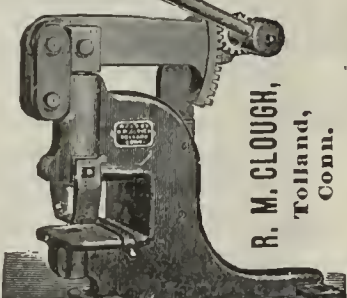
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 Illustrated
 CATALOGUE
 DONE ON X.L.C.R. PUNCH

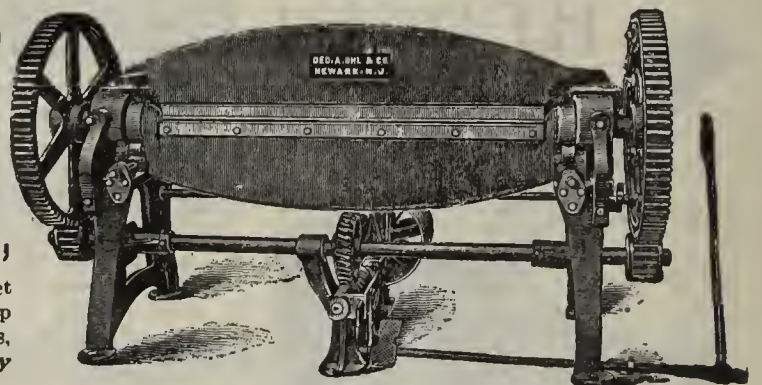
PRESSES
EXCELSIOR TOOL & MACHINE WORKS
 212-214 SPRUCE ST. ST. LOUIS, MO

GEO. A. OHL & CO., (Telephone 873.)
 157, 159, 161 Oraton St., NEWARK, N. J.,
 Manufacturers of all kinds of

METAL WORKERS' MACHINES, BRAKES

(ALL SIZES).
 Heavy and Light
 Squaring Shears,

Punches, Presses, Sheet
 Steel Lath Machines, Drop
 Presses, Draw Benches,
 and Special Machinery
 of all descriptions.



Heavy Automatic Power Brake.

Sheet Metal Tools



For any and all Purposes.
SHEARS, PUNCHES, Etc.

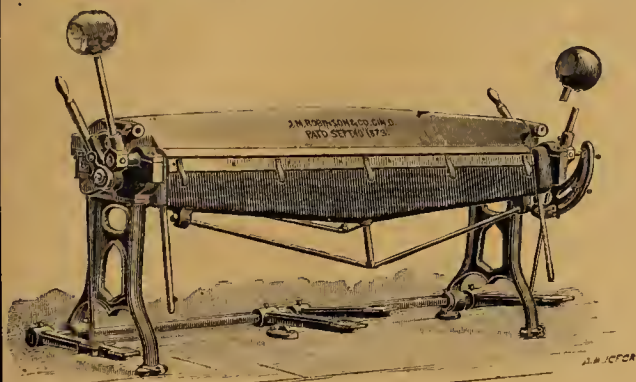
**SPECIAL SHEET METAL
 WORKING MACHINERY
 FROM SPECIFICATIONS
 PRODUCED ON SHORT
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Write for Prices and Descriptive
 Circulars.

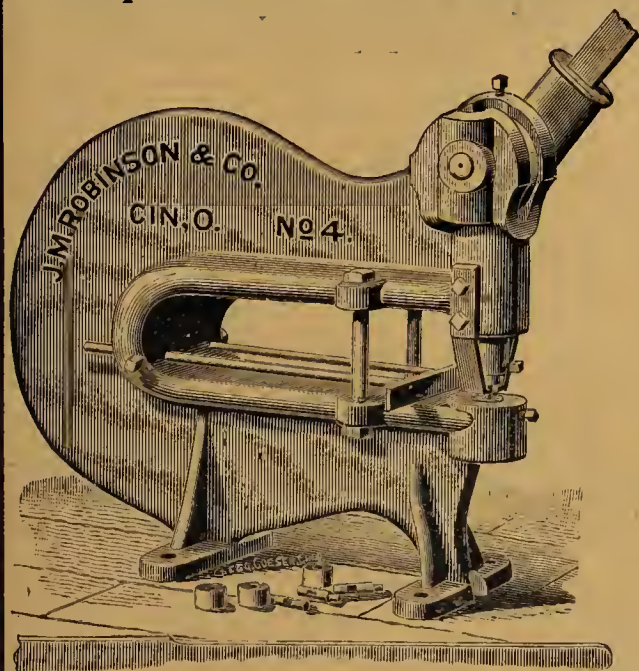


BERTSCH & CO., - - Cambridge City, Ind., U. S. A.
 Agents, **MERCHANT & CO.,** Philadelphia, Pa.

Double Eccentric Cornice Brake.



Deep Throat Punching Press.



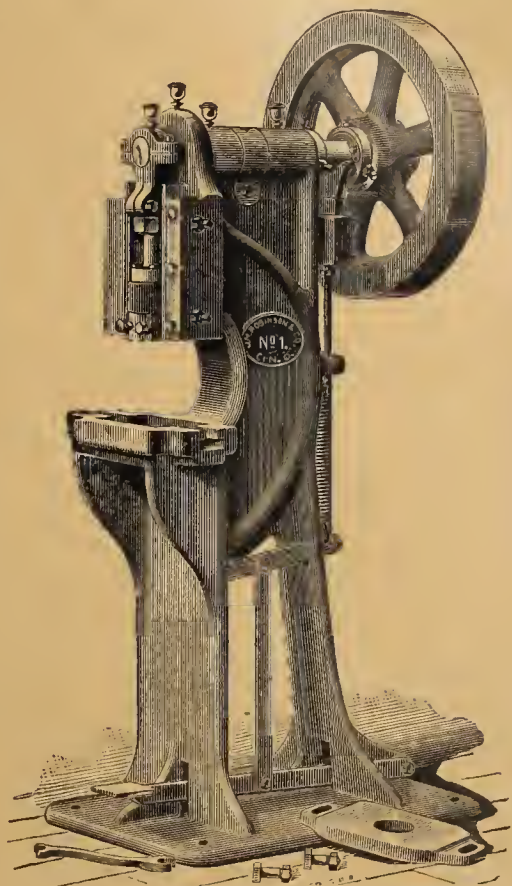
Sheet Metal Working Machinery

of all kinds
manufactured
by

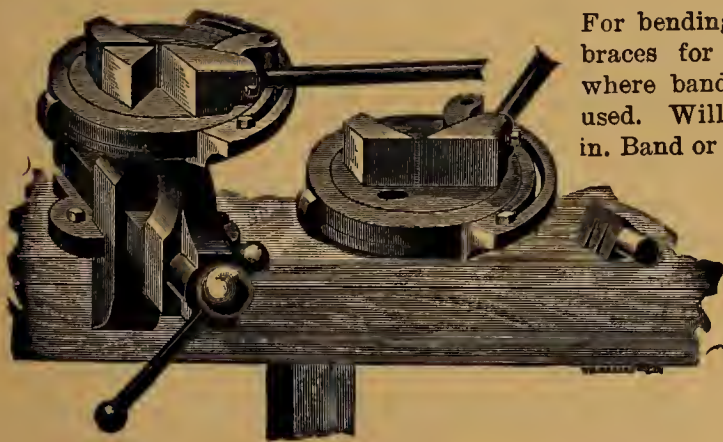
THE J. M.
ROBINSON
MFG. CO.,

225-229 W. 2d St.,
Cincinnati
Ohio.

Punching Press



A New Bending and Forming Tool



For bending and forming stays and braces for cornice or other work where band iron or steel are to be used. Will bend any shape $\frac{1}{4} \times 2$ in. Band or Bar.

THE KEENE
BRAKE,
AND SHEET METAL
WORKING MACHINERY
A SPECIALTY.

GEORGE C. KEENE & CO., - Cincinnati, O.

SOLDER.

Buy the Guaranteed Grades. STRICTLY NEW METAL.

"HUNGERFORD'S BEST," "ANVIL BRAND,"

"STAR BRAND," "REFINED WIPING."

Each Brand ALWAYS THE SAME. Packed in 250 lb. Cases. Large Stock
Always on hand. Shipments Made Same Day Order Reaches Us.

WRITE FOR PRICES.

We also carry a general line of BRASS and COPPER in Sheets, Rolls, Rods, Tubes, Wire, Rivets, etc., also Soldering Coppers. Stock Sheets sent on request.

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IMPROVED
Patent Automatic Can Body
Double Lock Seaming
Machines.

COMBINATION
Presses and
Dies, Sheet
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218 New Street
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★ SAWS ★

Our Star Hack Saws are now used in nearly all Iron-working Shops the world over. They are equally useful for farmers and men in all departments of life. They will cut iron and wood equally well. A nail does not dull them at all. One blade, which costs five cents, will cut off an inch square bar of iron 200 times without sharpening. We have cut off such a bar 337 times with one blade. All hardware dealers will furnish these saws. If not, we will send one steel frame and six blades by mail, prepaid, on receipt of \$1.00.

All good blades are stamped with a ★
MILLERS FALLS CO., 28 Warren St., N. Y.

— VILLAGE LOAFER (to the factory lodge-keeper): "Ony danger o' a job the day, Jimmy?"

Jimmy: "Ay, mon, there is a job. Wait a meenit, and I'll speak for ye to the foreman."

Loafer: "Oh! ye needna bother, Jimmy. I'll come back the mornin' and see if onybody else has got it."—Moonshine.

— INDEFINITE INSTRUCTIONS.—Lady (to clerk in clothing store): "I want a pair of trousers for my husband."

Clerk: "What size, madam?"

Lady: "I don't know the size, but he wears a 15 collar."—Exchange.

The Main Top

OF THE

New Model Grand Range

Is devoted entirely to cooking space. On the ordinary range one quarter of the top is taken up by the smoke pipe collar. By an ingenious arrangement of the smoke flue in the 20th Century Model Grand, all the space which is thus usually wasted is available for cooking utensils—making each hole in the top equally serviceable.

BARSTOW STOVE COMPANY,
BOSTON, 55 Portland St.
PROVIDENCE, R. I.
NEW YORK, Beekman
and Water Sts.


Lighted by Frink Reflectors.

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Of Arts and Sciences.
I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,
Bullitt Building, Philadelphia.
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned, of uniform black color.
Dealers in all kinds of Iron and Steel Scrap

BRUCE & COOK.
TINNERS'
TOOLS and MACHINES.
TINNERS' SUPPLIES.

186, 188 & 190 Water Street, and
248 & 250 Pearl Street,
NEW YORK.



"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

Oven Capacity

is one of the principal requirements in a modern range This is increased 50 per cent. in the

MODEL HUB

With Steel Oven,
by baking on oven bottom and oven rack at same time.
NO CHANGING OF FOOD NECESSARY.

SMITH & ANTHONY CO., Boston.

We Solicit Your Orders

..... FOR

Prompt Shipment

FOR ALL KINDS OF TIN PLATES.

N. & G. TAYLOR CO.,
Manufacturers,
TIN AND TERNE PLATES,
PHILADELPHIA.

Don't You Admire

the man who stands right up in his boots and tells you that he don't claim to sell the lowest priced goods in town, and the next minute takes off his coat and proves to you that when quality and service are considered his goods are cheapest after all? Yes! you admire him and you buy of him, and a good many of those kind of men sell

GLENWOODS.

Write the Weir Stove Co., Taunton, Mass.

INCREASING DEMAND TELLS THE STORY ...

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN.

McCLURE & CO.,
Manufacturers of Tin Plate,
PITTSBURGH, PA. 211, 218 and 215 Second Ave.
PHILADELPHIA, PA. 115 North 7th Street.

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A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

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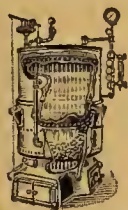
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Albany, N. Y.

Fire Brick Stove Linings

HIGH GRADE. LOW PRICE.

Also **Plastic Iron Stone Stove Lining**

In Bags or Barrels. Send for Prices.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

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STOVE LININGS

MCLEOD & HENRY CO.,

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Gray Iron Castings. **S. CHENEY & SON,**
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Paragon Point No. 6.—PERFECT ADAPTABILITY.

While hard coal is mostly used in the Paragon Furnace, we make it to burn soft coal as well, and pea coal or coke can be burned in any size and any style. The Paragon line is also adapted to low cellars, and we have a form of it for bricksetting. We also make a combination Paragon with either steel or cast iron radiators.

This point means that whatever your requirements may be in the furnace line, you need not go outside of the Paragon Furnace catalog to meet them.

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 NEW YORK PHILADELPHIA BALTIMORE

American Sheet Steel Company
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 Manufacturers of all varieties of
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 "V" Crimped

Apollo Best Bloom Galvanized
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If you have a line of
P. P. STEWART

Goods on your sample floor, your fall trade
 is assured.

Quick sellers bring big profits.

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"KITCHEN
 BOILER
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—EXPLAINS THE—

PRINCIPLE
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Piping Boiler

FIFTH EDITION
 Price, \$1.00

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GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve
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JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take
 no more room than an ordinary air cock.
 Endorsed by the leading steam experts as the
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 genuine stamped with our Trade Mark.
JENKINS BROS., New York, Boston, Chicago, Philadelphia.

FOLLANSBEE BROTHERS CO.,
 328-330-332 Second Ave.,
 Galvanized and Black Sheets.

The best made
 Sheet Copper
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 Manufacturers
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Steam Specialties.

RELIEF and NOISELESS BACK
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 TANK TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS
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READ OUR "AD"
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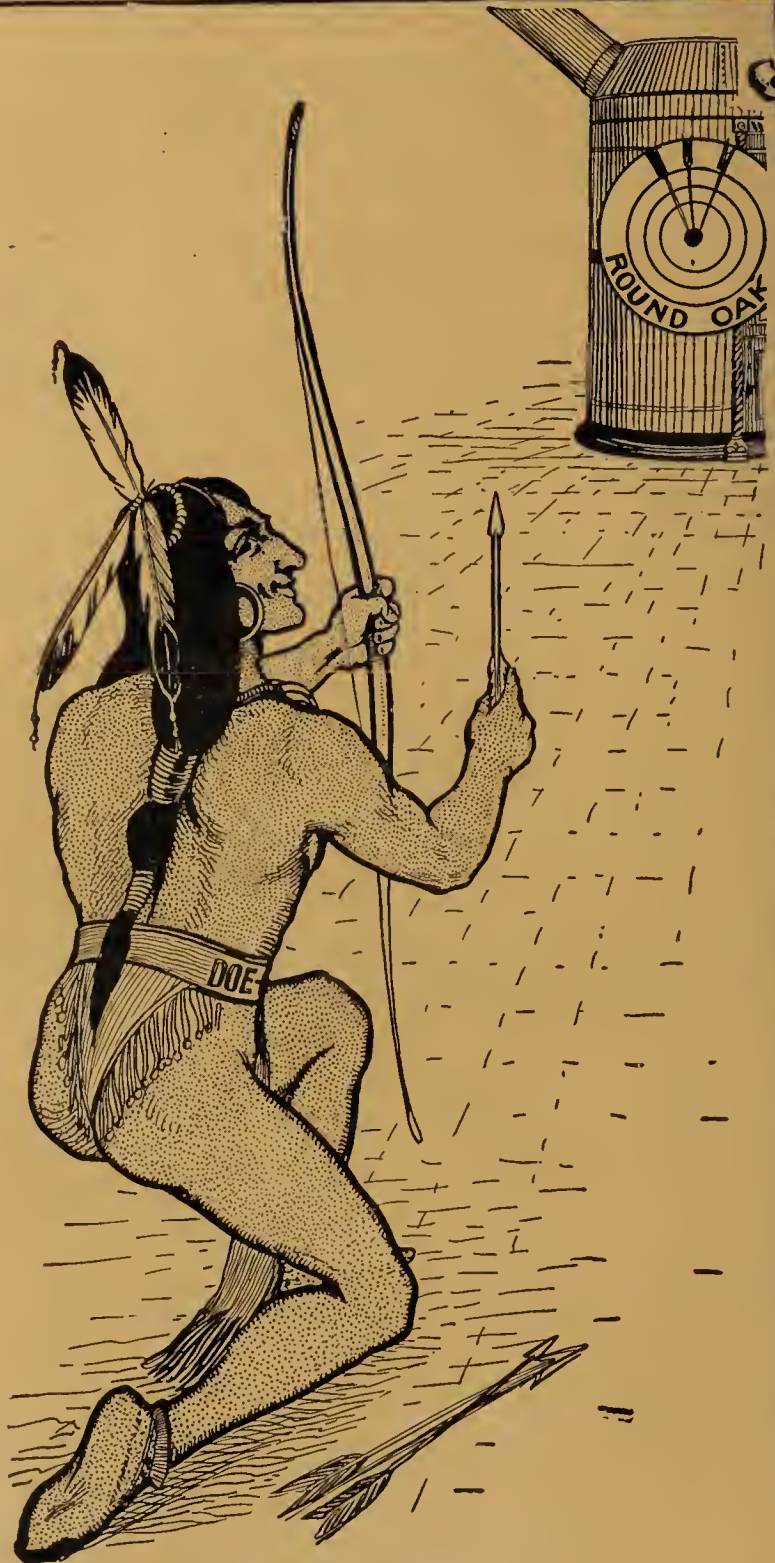
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ROUND OAK STANDARD OF AMERICA

There are
some towns,
and good
towns too,
where nothing
but hot water
jobs can
be sold
because
cheap furnaces
and cheap
furnace work
had the
first inning.

**The
Round Oak
is changing
all that**

as fast
as it can
make a
demonstration.



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The sale of reliable wares results always
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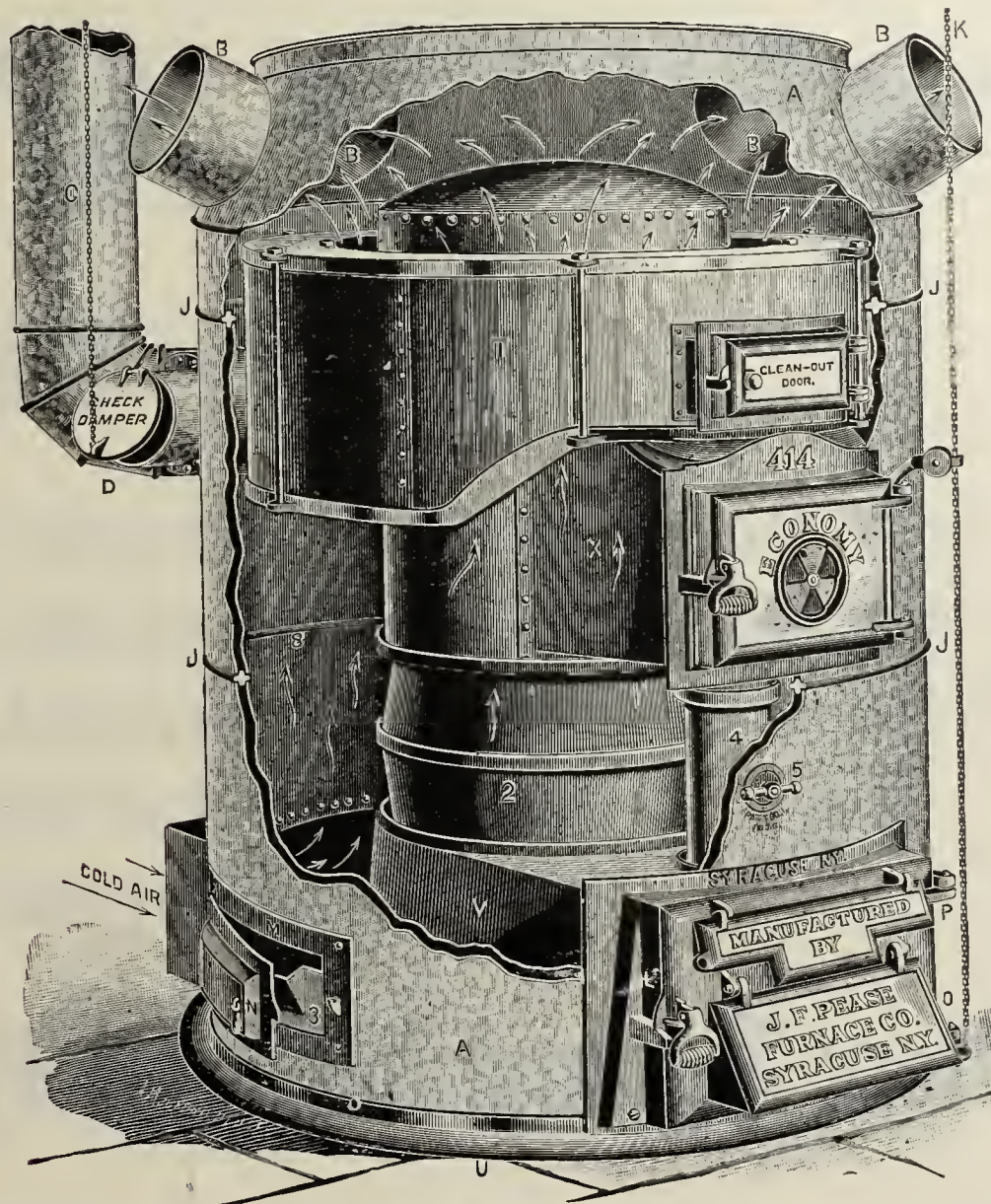


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PEASE-ECONOMY

400 SERIES.



A Splendid Seller.

Easy to Talk About.

THOROUGHLY DESIRABLE.

Every "Economy" Furnace is Durable.

International Heater Co.,

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BOSTON, NEW YORK, CHICAGO, DENVER.

LARGEST MAKERS OF HEATERS IN THE WORLD.



First Prize Paris, 1900.



Nothing too

“GARLAND”

For the Sea

New Models of Steel Ranges.

New Models of Steel Cooking Stoves.

New Models of Base Burners.

New Models of Sheet Iron H

New Models of Sheet Iron H

More New and Desirable Patterns T

Our New Catalogue is y

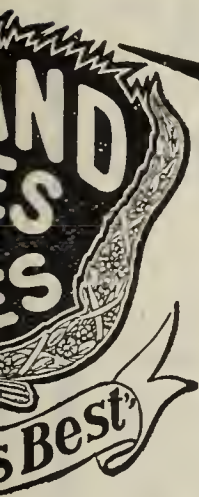
The Michigan St

Largest makers of Stoves

DETROIT.

CHIC

WORKS AT DETROIT, MICHIGAN.



First Prize Paris, 1900.

Good for AGENCIES of 1901.

New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
Stoves for Coal (Hot Blasts).
Stoves for Wood (Air Tights).

Can Have Ever Before Been Offered.

For the asking.

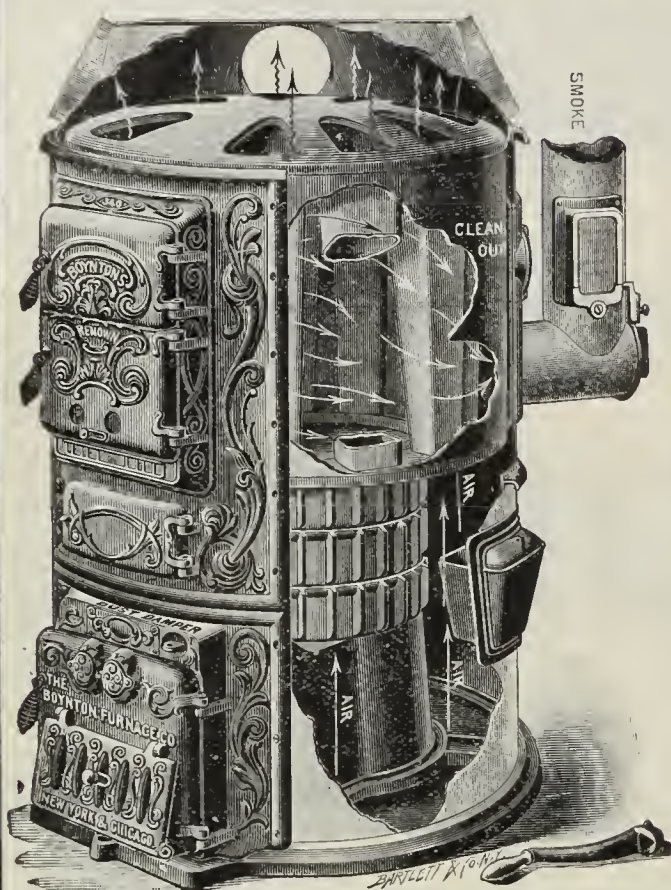
Michigan Stove Company,
and Ranges in the World.

CO. BUFFALO.



BOYNTON'S "RENOWN"

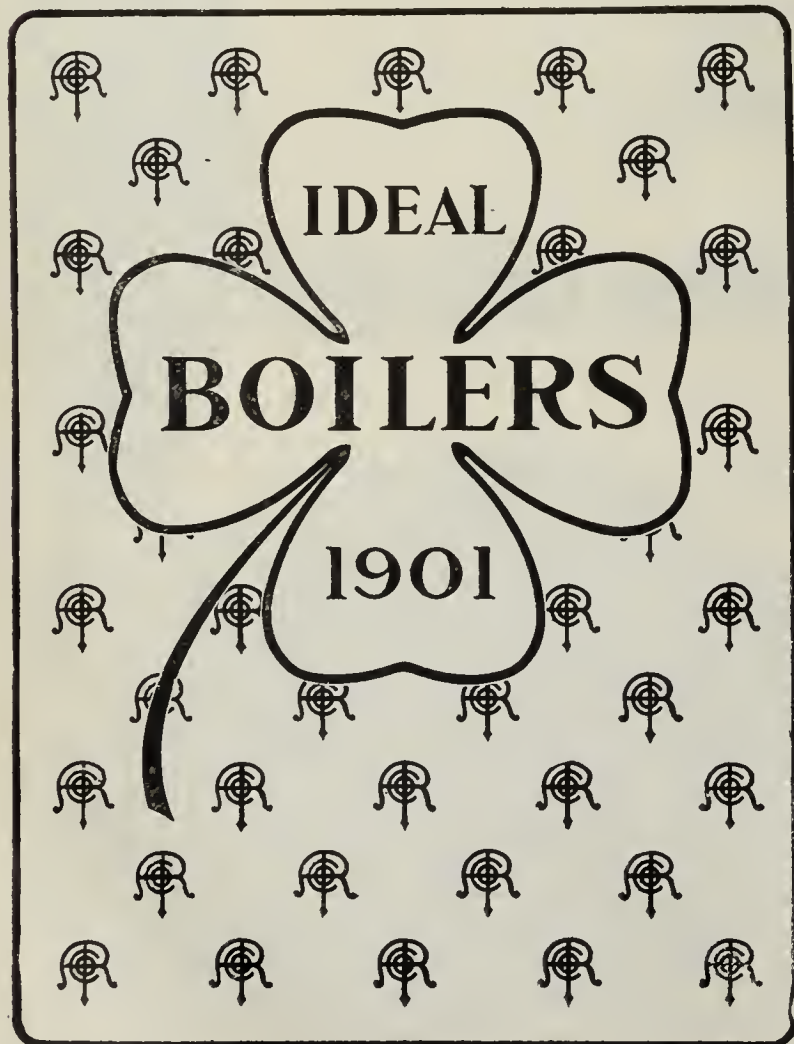
PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK, CHICAGO.



Our New Boiler Catalogue Now Ready.

A postal card request
will secure a copy...

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

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and

Denver.

Do you want to sell a good Number One, Medium-Priced Range that will Roast and Bake with the best of them? If you do then do not be persuaded to carry anything but the...

GEM-MILLER STEEL-PLATE RANGE.



Which are far superior to other so-called first-class Ranges as to Roasting, Baking and Durability that are made.

WITH improved removable Duplex Grate, improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickeled instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

Special attention is called to the easy manner of Removing and Replacing the Grates and Grate Frames in these Ranges without interfering with the Water Backs or Linings. Simply by taking out the small bolt and removing the Front Grate the entire Bottom Grate and Frame can be drawn out through the Front Draft Door.

THE WM. MILLER RANGE & FURNACE CO.,

Nos. 125 and 127 E. Fifth Street, CINCINNATI, O.



CINDERELLA

STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.
We would be pleased to send our catalogue.



PITTSBURGH STOVE & RANGE CO.,

PITTSBURGH, PA.

WESTERN SALES AGENT,

W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.



"Norman" Steel Range.

BUILT LIKE A WATCH.



ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.



Moore's ^{Air-Tight} Heater



Home, Sweet Home.

There is no place like home, and there's no home so comfortable as that which is furnished with a **MOORE'S AIR-TIGHT HEATER.**

This remarkable stove has now been before the American people for ten years, and has made a record for efficiency and economy which is unexcelled.

Joliet Stove Works

JOLIET, ILLINOIS.

Model Radiator

For Hard or Soft Coal.

Made in four sizes, Nos. 12, 14, 16 and 18.
 Every stove a single or double heater complete, without the use of extra parts.
 Large heating surface—Equal to that of an Oak.
 Best and simplest reversible pipe collar.
 Very substantial outer casing, which is easily removed.
 Joints ground and cemented.
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 Our patented Air-Tight draft register in Ash Pit Door.
 In this stove we use our new patented method of holding the sheets of mica. They will not get out of place or smoke up.
 Handsome Nickel Ornamentation.
 A postal card will bring you more information.

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Portsmouth, O.

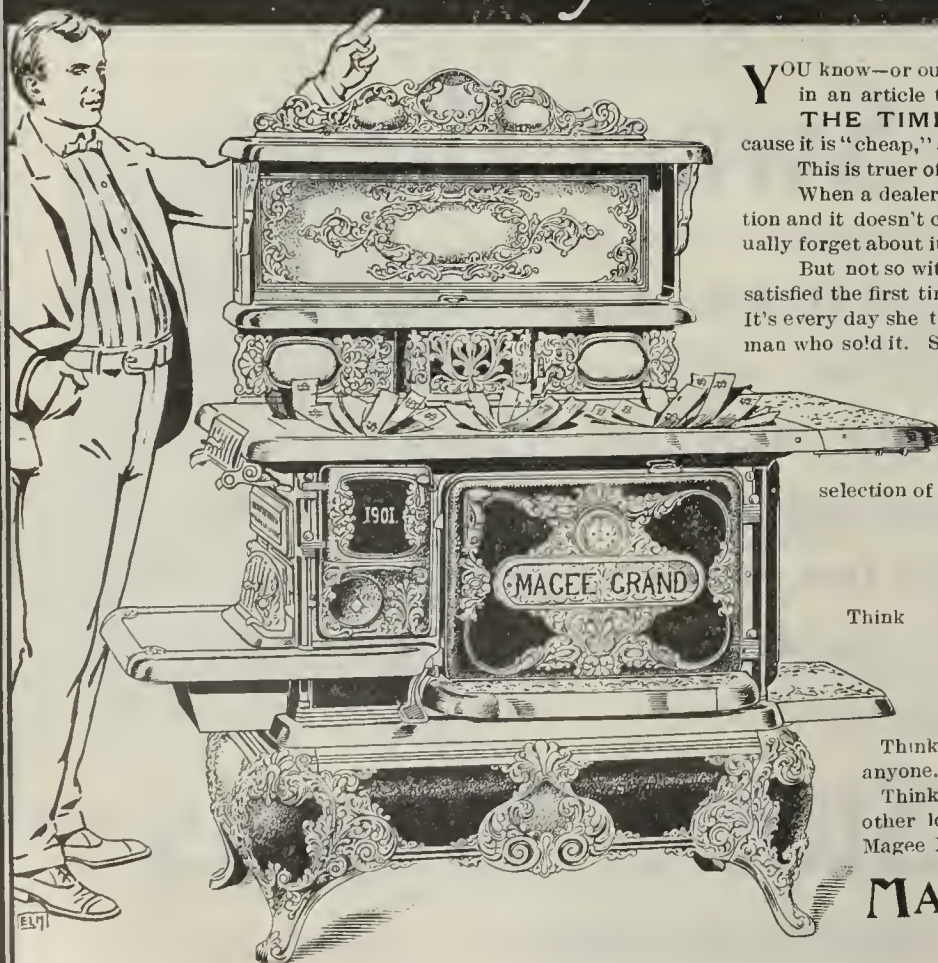
MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan and
the Northwest



MODEL RADIATOR.

There's Money in the Magee Ranges



YOU know—or ought to know—that there's more money, in the end, in an article that satisfies **EVERY** buyer, and satisfies **ALL THE TIME**, than in one that is sold not on its merits, but because it is "cheap," and that will not—can not—give lasting satisfaction. This is truer of cooking apparatus than of most things.

When a dealer sells an article intended for immediate consumption and it doesn't come up to expectations, the consumer may eventually forget about it.

But not so with a range or cook stove. The user isn't only dissatisfied the first time she tries it—she has 365 disappointments a year. It's every day she thinks hard things about the stove and about the man who sold it. She's apt to say uncomplimentary things about both to neighbors and friends—things that are not going to help the sale of stoves, or of anything else in the store.

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Think

Magee

and
you'll
make no
mistake.

Think if you've ever heard of a Magee disappointing anyone.

Think of the Magee agents you may happen to know in other localities—have't they all found there's money in Magee Ranges?

MAGEE FURNACE CO.,
32-38 Union St., BOSTON, MASS.

Highest Grade Cooking and Heating Apparatus. Most Complete Line Under One Name in the United States.



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GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES

CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES,
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DEALERS, BUILDERS AND OWNERS

Should secure our Line of Goods. They
will then have the Best on the Market.

The **Columbian Banner, Comet, Prince and
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Ranges** are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder
Stoves, Gasolene and Oil Stoves.

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COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



Artistic
Enameled

Steel
Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse *Artistic Enameled Steel Ranges* with the ordinary black
baked Japan used on other ranges.

The "**ARTISTIC**" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical; the best steel range.

SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

**GAS STOVES
& BURNERS.**

**HADLER
CO.
PITTSBURG,
PA.**



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**THE MOST
COMPLETE LINE
FOR ALL GASES**



1902

"RELIABLE"

STOVES and RANGES

represent the highest type of perfection in stove construction. They are far superior to all others in points of style, finish, durability and economy in the use of fuel.

"RELIABLE" STEEL RANGE BODIES are made of Wood's best blued polished steel, thoroughly lined with sheet asbestos and steel plate. Bottom oven plate is protected with two thicknesses of asbestos and three thicknesses of steel; also a two inch dead air space. This construction insures economy of fuel.

Our removable duplex grate is the best and our sectional fire pot is a proven success.

Our **"RELIABLE" OIL HEATERS** are too well known to necessitate our setting forth their many advantages over others. Suffice it to say they bear the name "RELIABLE."

Twenty-three years of continued success in stove making and the past reputation of the "RELIABLE" is our best guarantee for the future. They have given universal satisfaction to thousands in the past, and will to you.

This Is The Line That Never Disappoints.

Keep your eye open for our **1902** line of **Gas** and **Vapor** cooking and heating appliances. We have some rare surprises in store for you later on.

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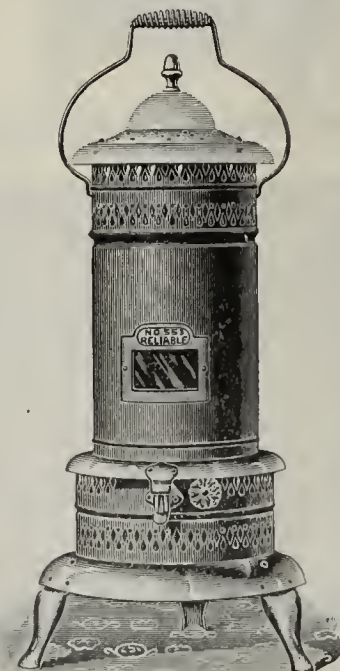
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The Schneider & Trenkamp Company,

CLEVELAND,

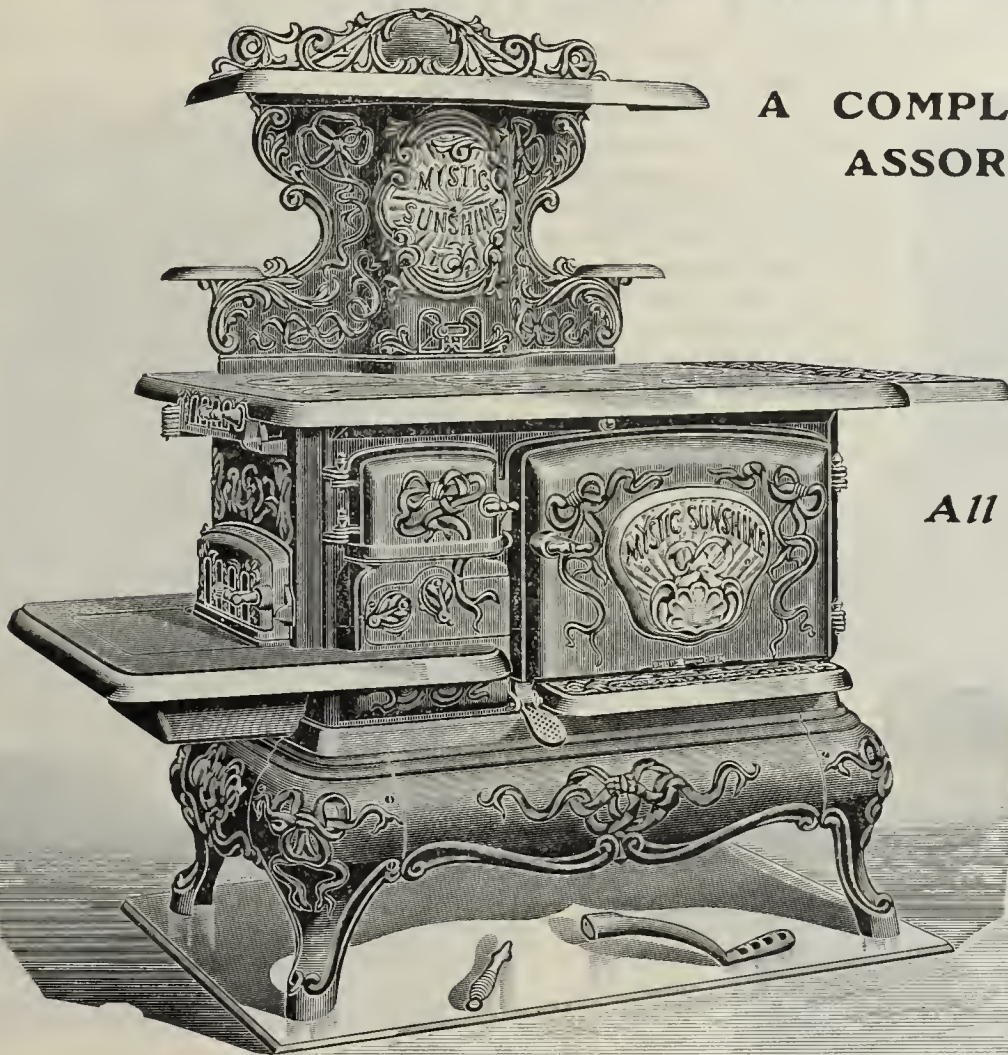
CHICAGO,

SAN FRANCISCO.



*Comparison is Useless when
Considering the* *so* *so* *so*

MYSTIC Sunshine Range



A COMPLETE
ASSORTMENT IN
ONE DESIGN

*All Styles
All Sizes*

Every dealer
who handles
the Mystic
Sunshine
has a
specialty

Made at the famous

SUNSHINE STOVE SHOP

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JEWEL STOVES AND RANGES..



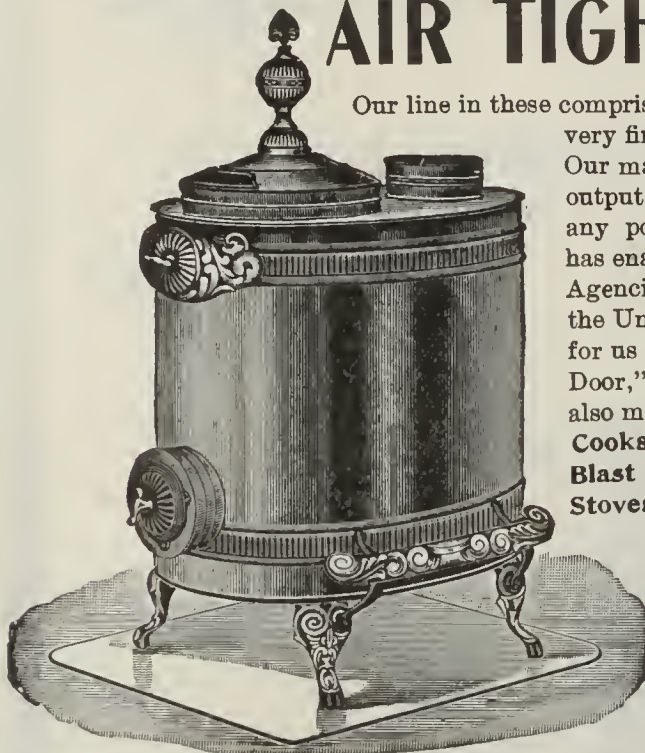
A Complete, Well Advertised Line.
Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

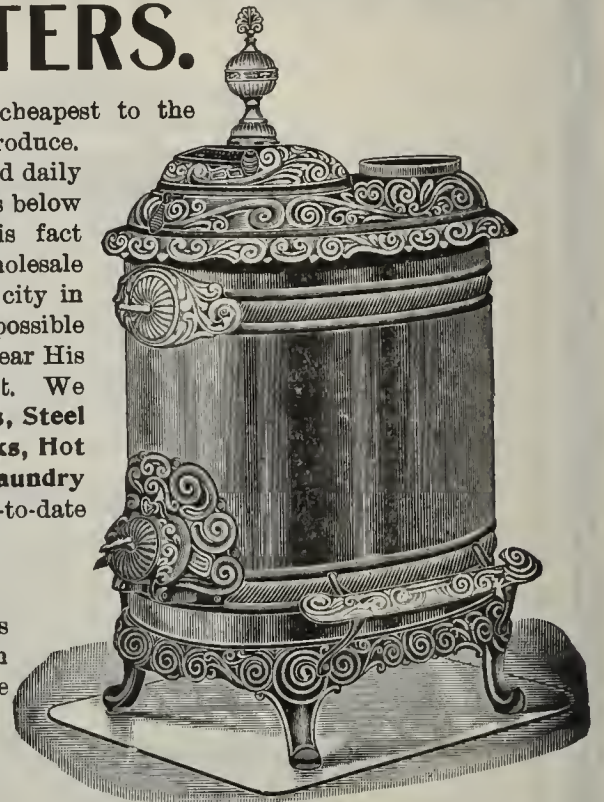
Detroit - Chicago.

AIR TIGHT HEATERS.



Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc., all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.



COOK STOVES,
OAK STOVES,
HEATING STOVES,
Air Tight Wood Stoves.
FIRE PLACE HEATERS,
FURNACES.

Send for Catalogue and Price-List.

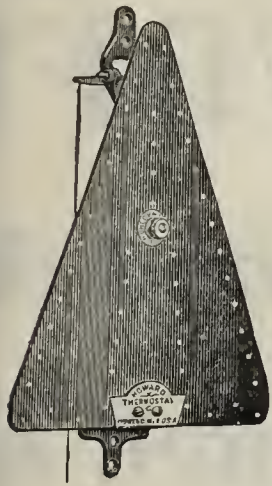
THE B. C. BIBB STOVE CO.,
BALTIMORE, MD.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.
MILWAUKEE, WIS.

Thermostatic Plate "T."



To Motor "M" which operates Dampers "D" or Valves "V."

Sprague

Automatic Damper and Valve Regulator.

It is so **simple** that directions for its sensitive adjustment are given in one short sentence.

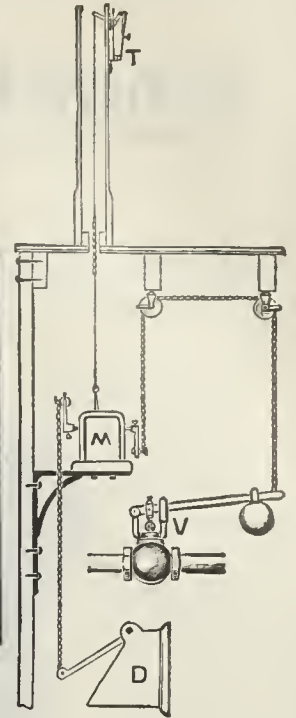
It is **durable** because it depends only upon simple agencies, such as contraction, expansion and spring force from common metals.

It has **power** enough in itself to do the work without the aid of electricity or compressed air.

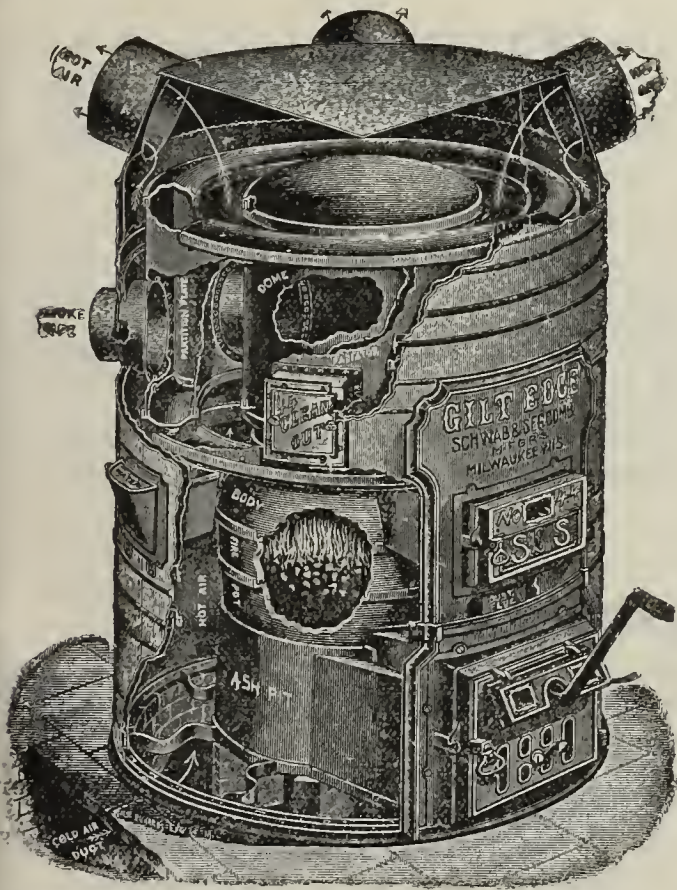
SIMPLICITY

DURABILITY

POWER



Made by **HOWARD THERMOSTAT CO., Oswego, N. Y.**

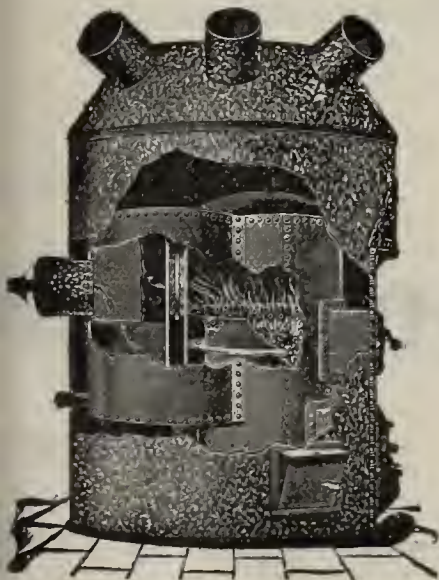


Gilt Edge Warm Air AND Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

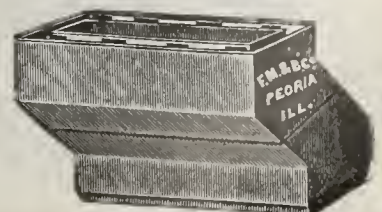
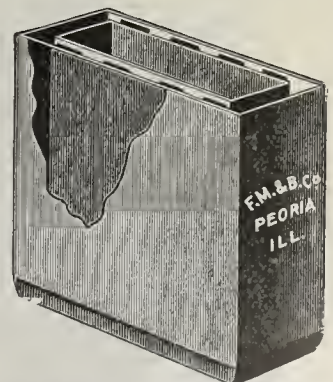
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

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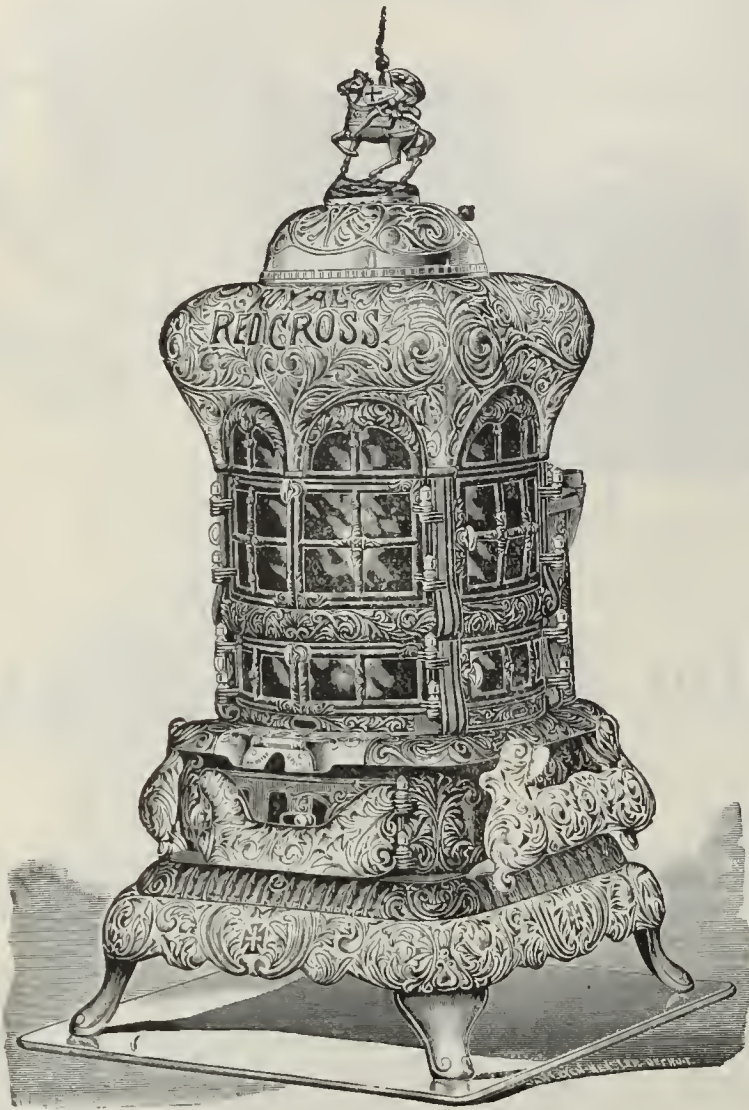
F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA ILLS.



From the **CO-OPERATIVE F'D**



Beauty and U

The "Red Cr

Furnaces is the most
in the market to-day
handles them will test

"The Royal."

The acknowledged leader of all parlor stoves.

No better parlor stove for the price has ever
been produced.

It is durable, beautiful in proportion and orna-
mentation.

For heating power and economy it has no
equal.

Every stove a double heater.

Fitted with our celebrated Eclipse grate.

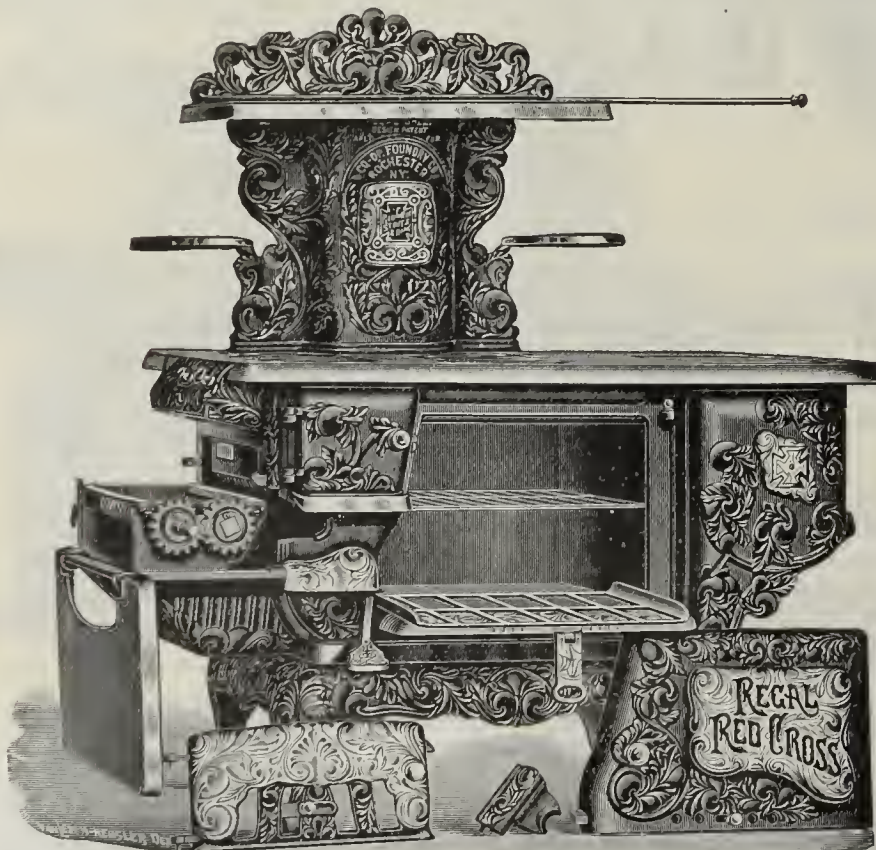
Regal...

"Red Cross."

Four holes, for hard or soft coal or
wood. Duplex or Dockash grate as
desired.

Made with either straight front or
top pouch.

Best seller in the market.



MANUF

Co-operative

Roche

Western Agency, J. P. LIND

CO.'S CATALOGUE No. 35.

Quality Combined.

SS" line of Stoves,
Ranges and
attractive and desirable
for every dealer who

This is the Famous

"Red Cross" Oak.

A Few Special Features:

Nickled register wheel in feed door.

Mica illumination in upper feed door.

Gas ring top of fire pot, furnishing air to the
surface of the fire, insuring perfect combustion of
all the gases. No catches, every door being secured
by turnbuckle. Cast iron lining resting on the fire
pot protecting jacket from extreme heat.

And others too numerous to mention here.

The New "Ajax" Furnace.

Note the down draft hot blast gas and
smoke consumer—entirely new and original, no
other furnace on the market has this special
feature. Saves fuel, at the same time burns all
the smoke and gases, consequently gives more
heat.

With steel or all cast iron radiator.

Send for special furnace catalogue.

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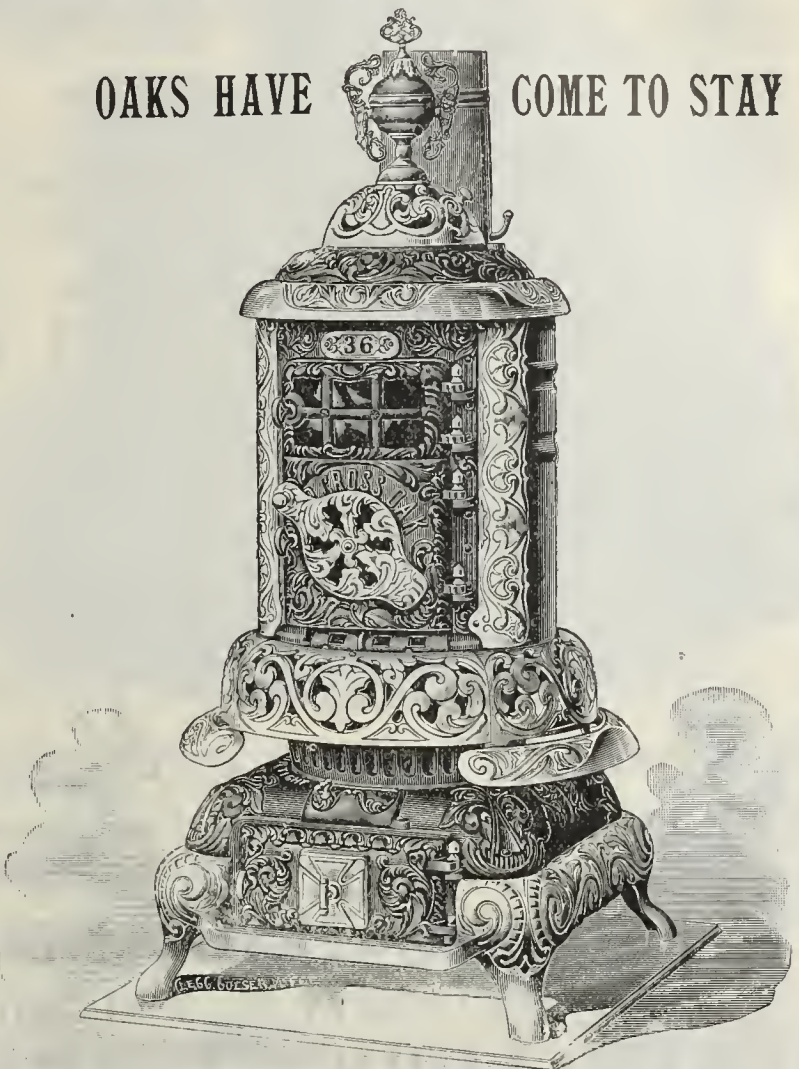
Foundry Co.,

Brooklyn, N. Y.

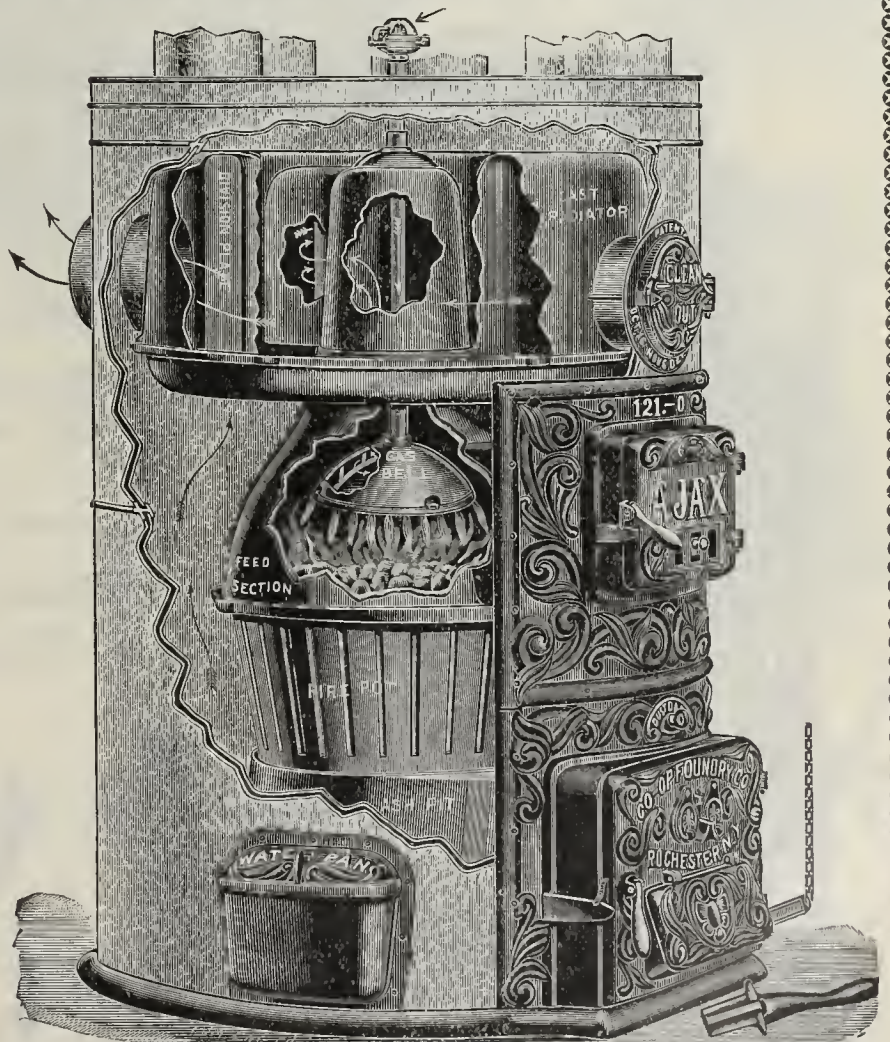
ANN & SONS, Milwaukee, Wis.

OAKS HAVE

COME TO STAY



FULL NICKLED DOUBLE HEATER, FOR HARD OR
SOFT COAL OR WOOD.



ORNAMENTED CAST FRONT, TRIANGULAR GRATE,
FOR HARD OR SOFT COAL.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick,

in radiator will wear for years. Our improvements for 1901 give us a perfect heater.

Triplex Grate.

PERFECT SHAKING.

PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces, for Hard or Soft Coal,

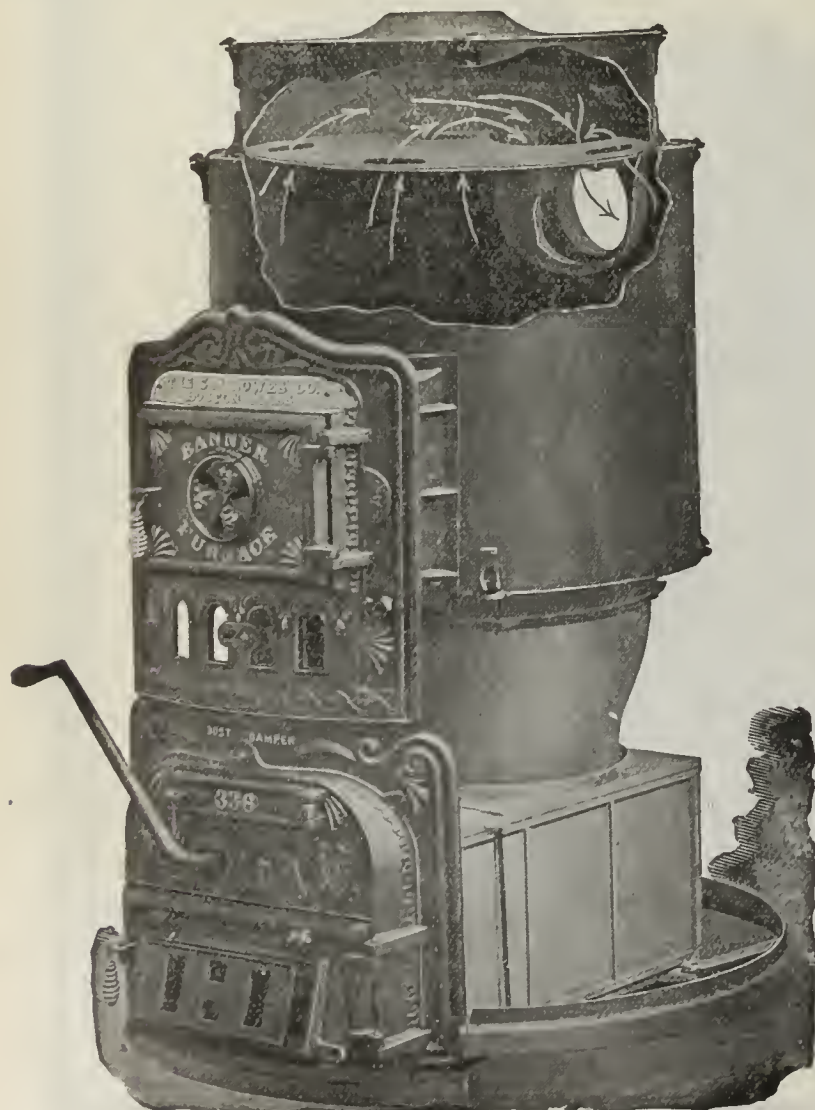
Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901



Deeper Ash Pit

Solid Front Shield

Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

*Modern Construction and Durable
Of Great Capacity*

Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

THE S. M. HOWES COMPANY

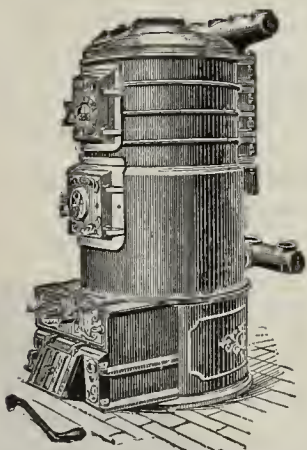
40, 42, 44, 46 Union Street
BOSTON, MASS.

GURNEY

HOT WATER HEATERS and STEAM BOILERS

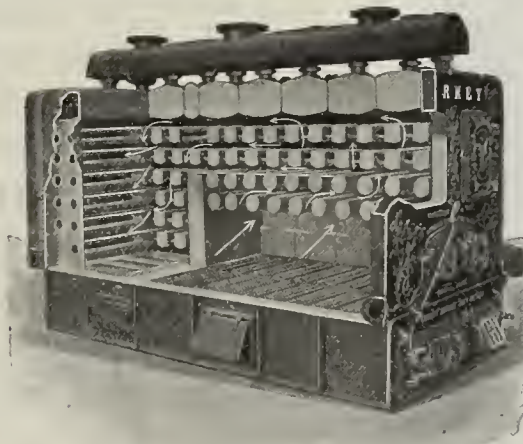
Are so constructed that they furnish
the greatest power from least fuel.

They Insure Complete Satisfaction.



"400 Series" Hot Water Heater.

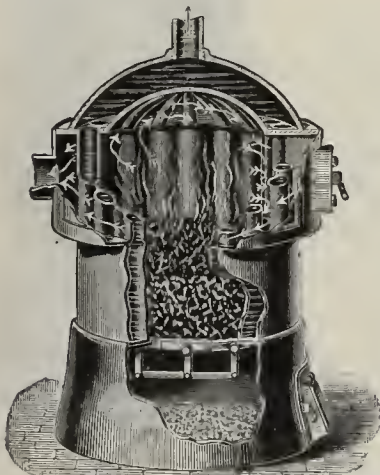
Capacities for All
Requirements.



"Bright Idea" Safety Water Tube Boiler, for Steam or
Hot Water.



"400 Series" Steam Boiler



"Doric" Hot Water Heater.

Send for Latest Illustrated Trade
Catalog.



"Defiance" Hot Water Heater

GURNEY HEATER MANUFACTURING CO.

Home Office, 74 Franklin St., Cor. Arch, Boston, Mass.

Branch, 111 Fifth Ave., Cor. 18th St., New York City.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ill.



GOOD

on account of having placed v
one year ago, to be able to ship

THE SA

the order is received. Among these we

THE ACORN AIR-TIGHT RADIATOR

A Perfect Fire Keeper.

Plain finish for high finish. Made with machine fitted Screw Register Dampers in Ash Pan Door and in Main Front Door. Large Square Ash Pit and Ash Pan. Draw Center Shaking Grate, Doors fitted and ground air-tight. Heavy Sheet Steel Body stretched on outside flange of the fire pot, and the joint becomes tighter the longer the stove is in use. Heavy Fire Pot, giving great heating capacity and insuring durability.

On both Plain Finish and High Finish Stoves Double Heating Pipe can be attached at the rear without removing the Swing Cover and Urn.

Made in Two Styles, viz.:

HIGH FINISH, PLAIN FINISH.

	in.	in.	in.	in.
Fire Pot Diameters,	12	13	14	15
Nos. of Plain or High Finished Stove,	29	39	49	59

HANDSOMEST SOFT COAL STOVE EVER MADE.

The High Finish Stove is made with Full Nickel Base, Nickel Top Rim and Open-work Swing Cover and Urn. Large Front Nickel Panel, large, practical Nickel Rails. Large Malleable Iron Turnbuckles and Nickel Screw Dampers. The outside plates are beautifully carved.



The Plain Finish Stove has Nickel Foot Rails, Nickel Front Base Strip, Nickel Open-work Swing Cover and Urn, Nickel Screw Dampers and Large Malleable Iron Turnbuckles. Nickel work cannot discolor by heat, as the outside plates are protected by the air space between them and the inside of the stove.

The Only Stove of its Class having Doors on Each Side
of Fire Pot for Direct Radiation. . . .



HIGH FINISH STOVE.
Side view, showing new Double Heater
Attachment.

RATHBONE, SA

ALBANY, N. Y.

"The Oldest Amer

Pacific Coast Distributers, The Harry Unna Company

UTUAL

FORTUNE

Large orders for Sheet Steel over
popular styles of heating stoves.

ME DAY

on two coal heaters salable everywhere;

Improved for 1901.

The New Volcano Air-Tight Heater.

For Hard Coal, Soft Coal or Wood.

With Ash Pan and Smoke Burner Attachment.

SPECIAL FEATURES: Made from Heavy Mirror-Finish Steel;

Burns the Smoke, Keeps the Fire, Saves the Fuel; Heavy Cast Lining above

Fire Pot, Draw Center Grate for Cone Center Grate, Machine-Fitted Draft Regulator; Bodies formed and Double Seamed, No Rivets Used; Lift-up Feeder Cover, Oscillating Smoke Burner, Ash Pan; Ash Pit Door Frame Reinforced and Bolted to Inside Cast Frame; Large Malleable Iron Turnkey.

THE SMOKE BURNER



Note the Small Cone or Deflector at the lower end of the Air Reservoir, which supplies the fresh heated air to the edge of Fire Pot.

THREE SIZES:

No. 41 (14-inch Drum), No. 61 (16-inch Drum),
No. 81 (18-inch Drum.)

NICKEL: Large Ventilated Front Nickel Name Plate, Heavy Side Rails, Steel Top Band, Malleable Iron Damper Handle, Nickel and Brass Acorn Top Ornament.



IT BURNS THE SMOKE
AND SAVES THE FUEL.

D & COMPANY

an Stove Makers"

AURORA, ILL.

San Francisco, 113-115 Battery St., San Francisco, Cal.

Royal Heaters.

MANUFACTURED BY THE
HART & CROUSE CO.
 UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces FOR WOOD.

Simple, Safe, Durable. Economical in Flue.

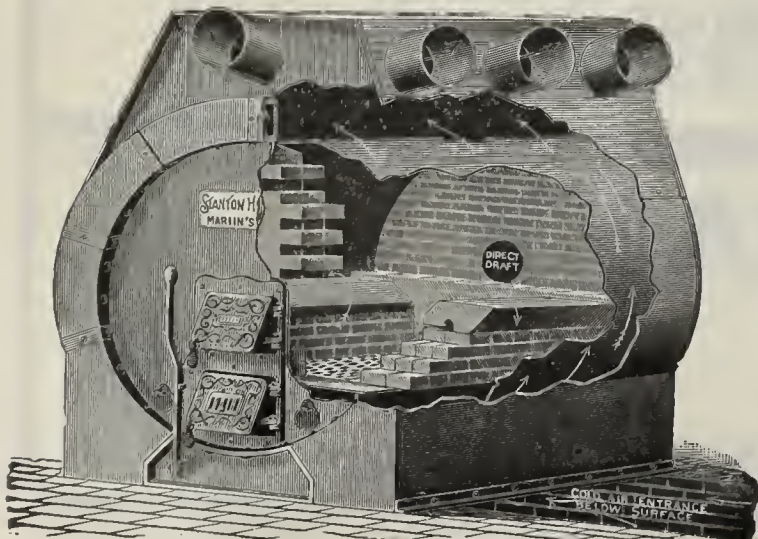
The Best and Cheapest Line of Wood Furnaces,
 Furnished for either Brick or Galvanized Iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater, PORTABLE CASD.



THE STANTON HEATER CO.,
 Louisville, Ky., Apl. 5th, 1901.

Martin's Ferry, Ohio.
 Gentlemen:—Your favor of the 8d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
 ROBINSON-HUGHES & CO.

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THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

See our advertisement next week.

SUPERIOR FURNACES

UTICA HEATERS

ALWAYS
EFFICIENT

RUSH ORDERS

We want your rush order for furnaces.

Our unexcelled facilities, our extensive line, our good stock on hand enable us to ship SUPERIOR Furnaces and UTICA Heaters the SAME DAY ORDER IS RECEIVED.

No annoying delays.

With SUPERIOR Furnaces and UTICA Heaters at the right prices, and with IMMEDIATE SHIPMENTS, we know we can please you.

Send for our catalogue and quotations, but remember

We want your rush order for furnaces.

UTICA HEATER COMPANY, - - UTICA, N. Y.
Chicago Heater & Supply Co., Western Managers, 54 Dearborn St., Chicago, Ill.

PARIS HILLS, MAINE, October 2, 1901.

DIGHTON FURNACE CO.,

GENTLEMEN: Yours of the 28th ult. received.

There are two "DIGHTON" Furnaces in our village, which have given good satisfaction. One was put in last year, the other the year before.

We think we want the No. 21 as our rooms are much larger than the others.

Our old Furnace was a ——— (well known name), fire pot was 22 inches and never has given very good satisfaction, that is, we do not think we get the heat from it that we ought to and have been troubled with gas for the last three or four years.

How long ought a Furnace to last with good care and not run to its utmost capacity; and from the information which you already have as to size and number of rooms, can you tell us how much coal we ought to burn from November to the middle of May?

Should we decide to order a No. 21 "DIGHTON" the first of next week, when ought we to receive it in South Paris?

Yours respectfully,

STILL IN THE LEAD!

MUELLER

Furnaces and Boilers

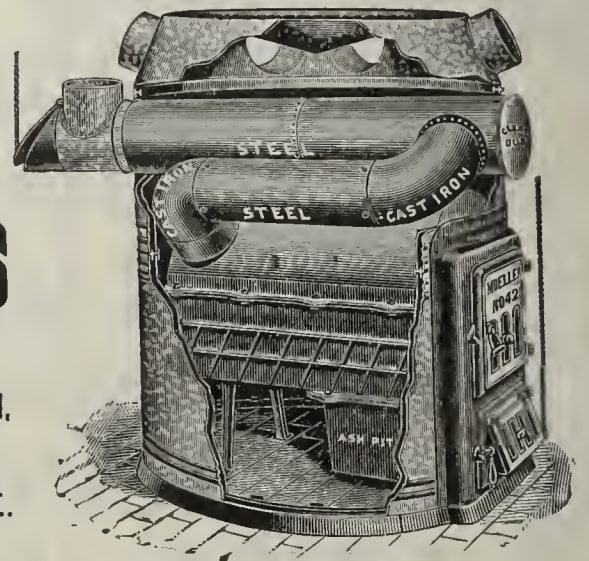
ALWAYS TO THE FRONT.

Made In all Sizes. For all Kinds of Fuel.

Write for catalogue and prices.

EVERYTHING IN THE HEATING LINE.

Get Our Special Register Offer.

**L. J. MUELLER FURNACE CO.,**

Established 1857.

190 Reed St.,

MILWAUKEE, WIS

Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

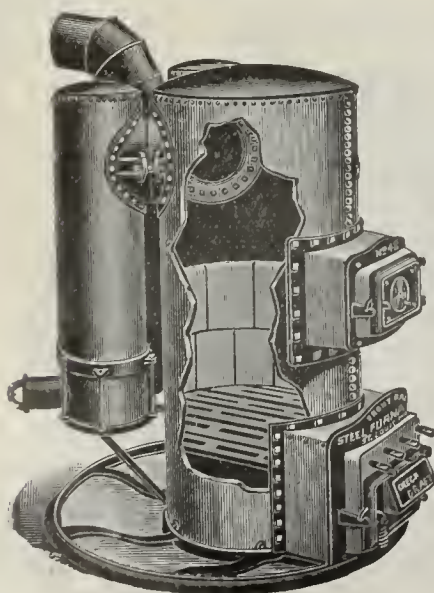
The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

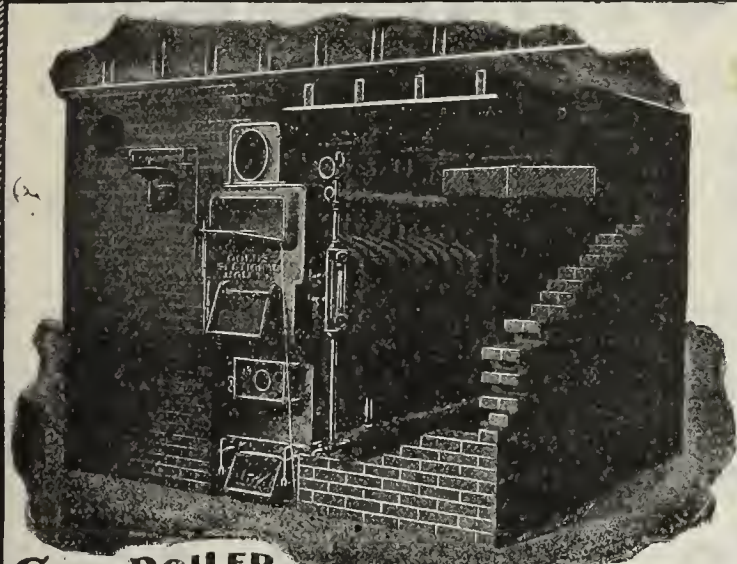
These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,

2301 to 2309 Lucas Ave., St. Louis, Mo.





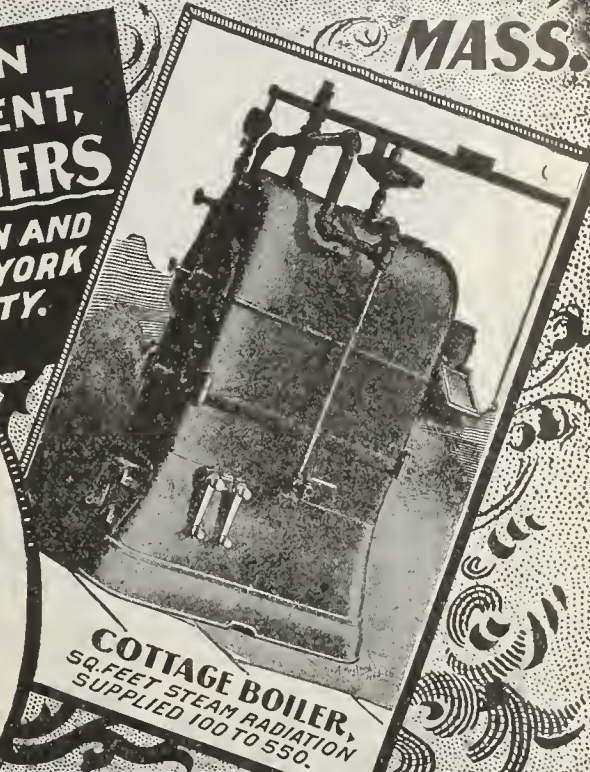
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

THE H.B. SMITH CO.

**WESTFIELD,
MASS.**

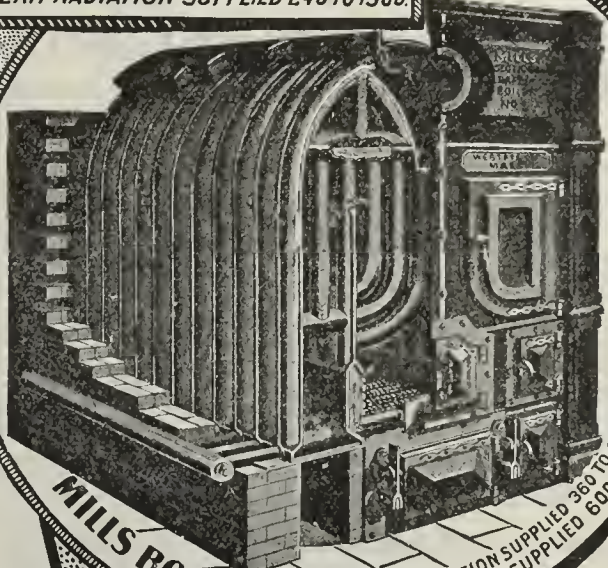
**EUROPEAN
AGENT,
AUG. EGGERS**

**BREMEN AND
NEW YORK
CITY.**



COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.

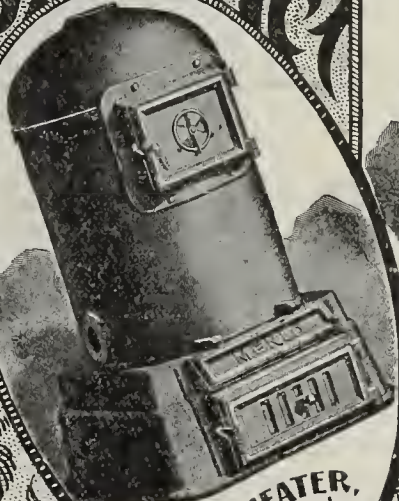
**PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.**



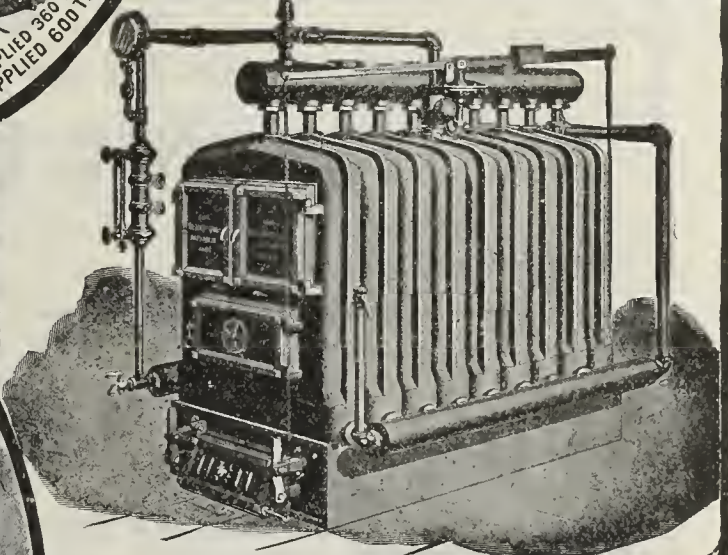
MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

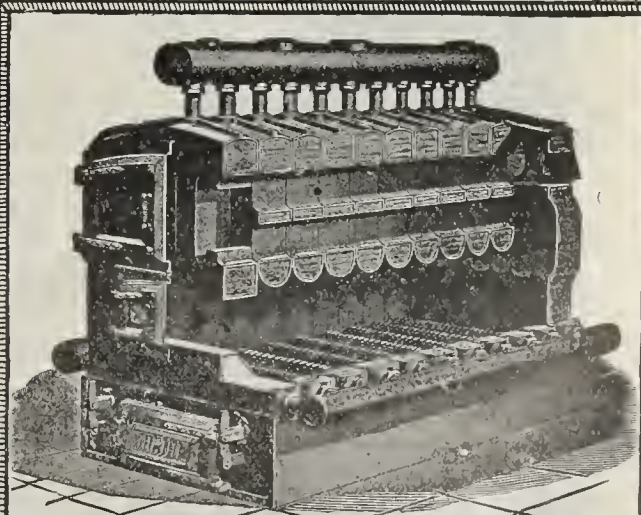
Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

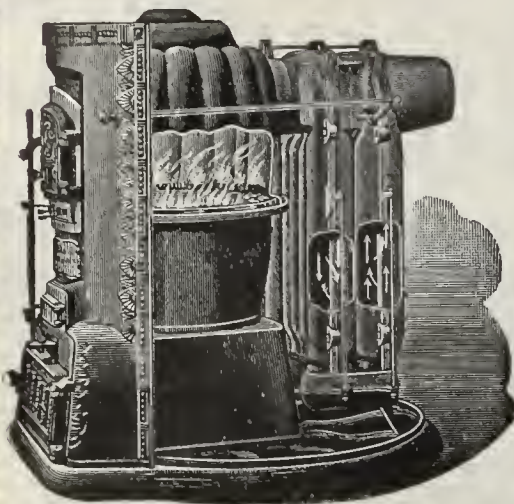
SALESROOMS:

**133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.**



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

BENGAL FURNACES



YOU NEED THEM IN YOUR BUSINESS.

THEY ARE TRADE WINNERS.
EASY TO SELL. SURE TO PLEASE.
ALL CAST IRON.

BENGALS burn perfectly anthracite or bituminous coal or coke, and use less fuel for a given amount of heat than any other furnace offered the trade.

BENGALS HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,
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KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

Apply All The Tests



to Schill's Furnaces and Ranges, and they will fill the bill every time. Whether the test be durability or economy of fuel, satisfaction to the user or salability. They never fail to meet every requirement.

Write for Catalogue and Prices.

THE SCHILL BROS. CO.,
CRESTLINE, O.



Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

WATER FURNACES

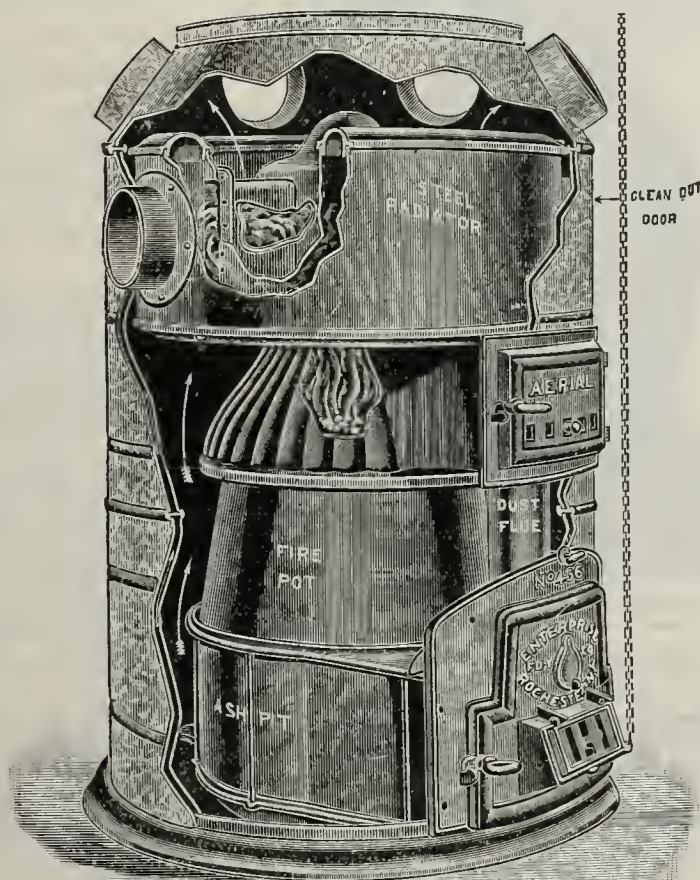
LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

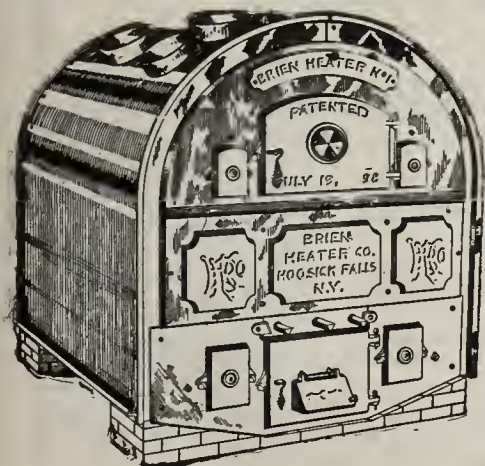
Aerial Furnaces

STRICTLY UP-TO-DATE IN EVERY RESPECT.



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ENTERPRISE FOUNDRY CO., Rochester, N. Y.



Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.
HOOSICK FALLS, N. Y.

Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, \$1.50.

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tanners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

Furnace Fittings.—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Registers Boxes and Stack Shoes, etc.

Sent postpaid on receipt of price, \$1.50.

DAVID WILLIAMS COMPANY,
PUBLISHERS,

232-238 William Street, New York

**HOT WATER
AND
HOT AIR**



HEATING BY COMBINATION STOVES
AND FURNACES.

Suitable for Large or Small
Houses, Stores, Conserva-
tories, Barber Shops, Ho-
tels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

**THE NATIONAL
PIPE BENDING CO**
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

They Fit Any
Furnace.

Base section when
used without ring
sections.



Ring Section.



These Boilers are made in three sizes
diameter, and from 100 to 600 square feet
radiation capacity.

Will heat those cold rooms, or an ad-
dition to the building. Will increase the
capacity of any furnace. Are cheaper
than coils and will do more work.

GLOBE WATER HEATER

Attached to any
Furnace will
heat water for
domestic use.

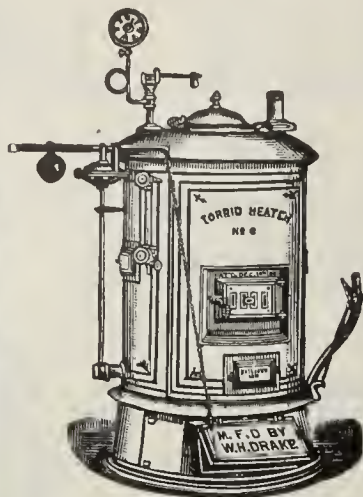


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FRANK D. STOLZ,

115 Lake St - - Chicago, Ill.

"TORRID HEATER."
FOR STEAM OR HOT WATER.

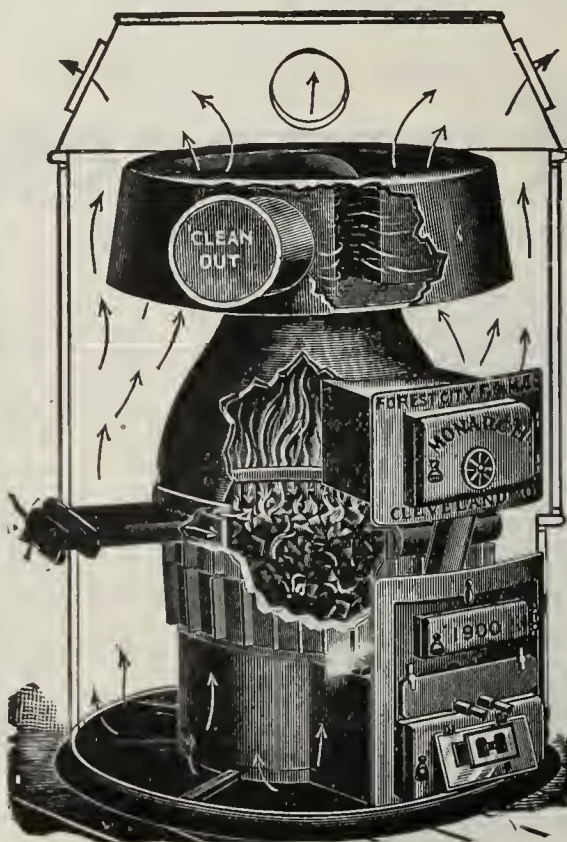


*It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and
Dumping Grate.
It is Low in Price.*

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W. H. DRAKE, No. 36 Clinton St.,
NEWARK, N. J.
Factory: Hackettstown, N. J.



MONARCH FURNACES.

All Cast Iron. For
Hard and Soft Coal.
At Foundry Prices
to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

**The Forest City
Foundry and Mfg. Co.**

81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High
grade only.

AHEAD AS USUAL.

We have not only stood the test of time, but look at the
result of physical test of Quimby Engineering Company before
Building Committee, on competition for public work in an
Eastern city.

QUIMBY ENGINEERING COMPANY.

PHILADELPHIA, PA., Aug. 5, 1901.

MESSRS. J. H. McLain Co., Canton, O.

Gentlemen:—We hereby certify that one-half section of
the Cornell Boiler was tested by us to destruction to-day, and
that it was ruptured at Two Hundred and Fifty Pounds per
square inch hydraulic pressure. Very respectfully yours,

QUIMBY ENGINEERING CO.,

Attest: JOHN M. LUKENS, H. H. Quimby, Proprietor.
(Chief of Bureau of Steam Engine and Boiler Inspection, City of
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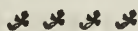
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To all who are interested in flues
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The Contents are as follows

	Page.
POINTS ON CHIMNEYS . . .	7-32
An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES . . .	33-35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.	
HOW TO IMPROVE A WEAK CHIMNEY . . .	36-40
VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES . . .	46, 47
SMOKE PIPE FOR WOOD FURNACES . . .	48
REMEDYING DOWN DRAFT IN CHIMNEY . . .	49-51
CONNECTED FLUES DESTROY DRAFT . . .	52-55
FAILS TO BAKE ON BOTTOM	56-62

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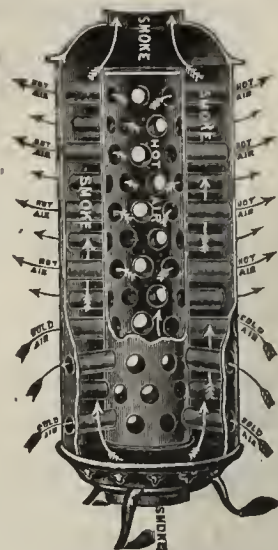
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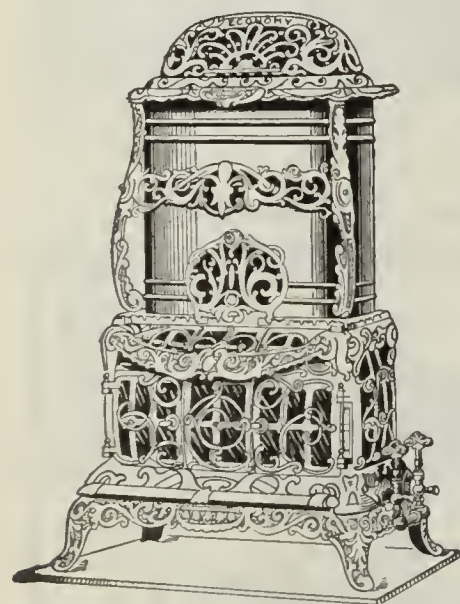
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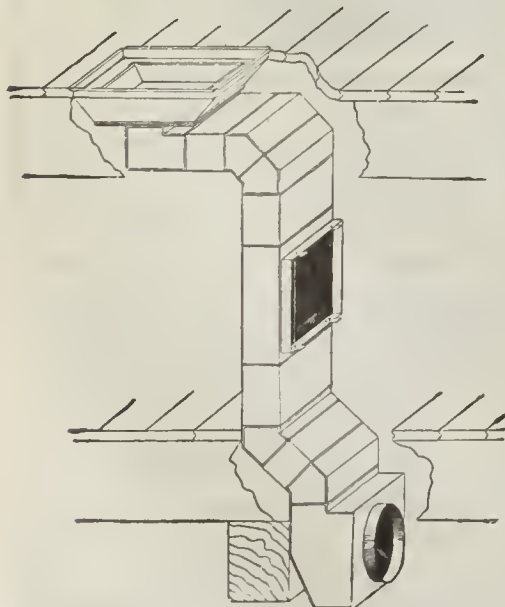
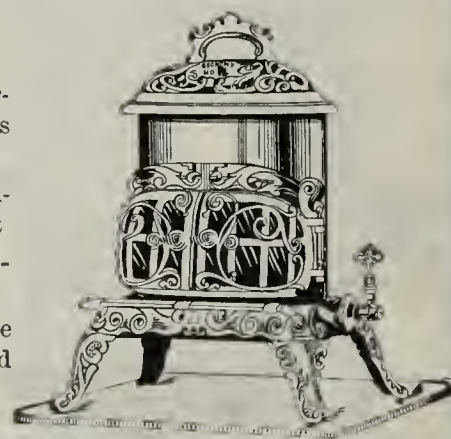
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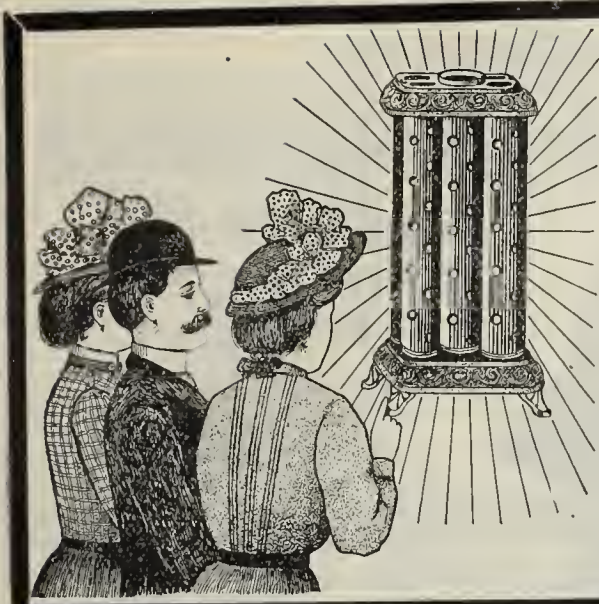
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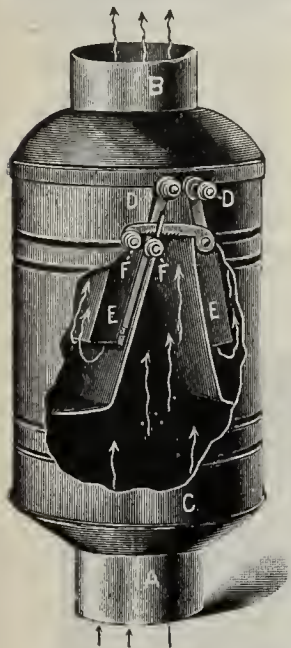
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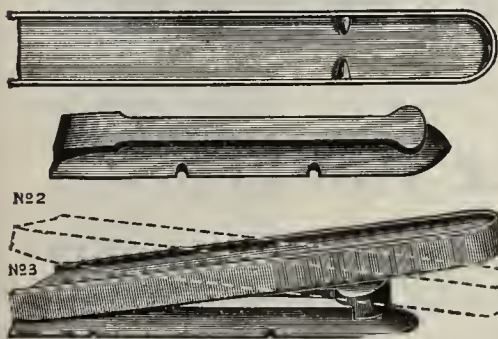
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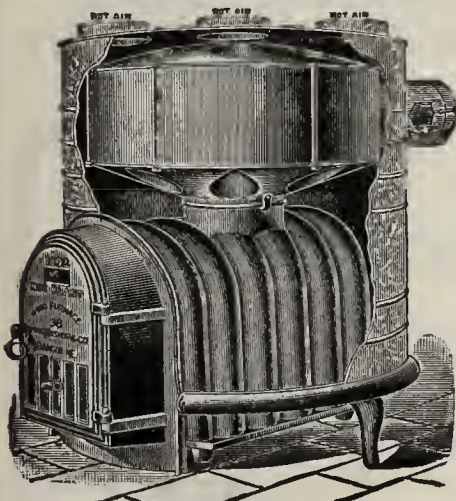
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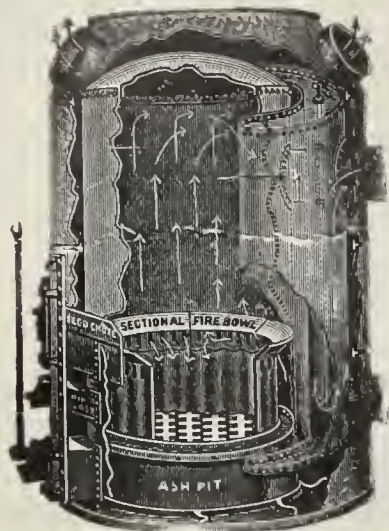
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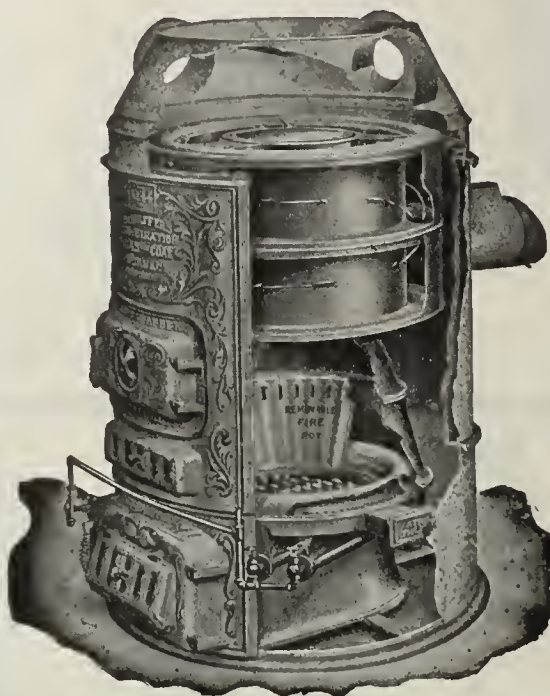


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It will heat a house as cheaply
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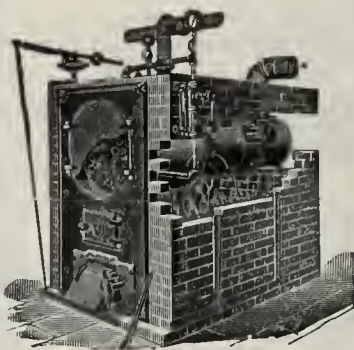
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The Kineo Furnaces are built to secure
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to carry the baby because you have
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from lack of exercise. When I went
to school I learned in my physiology
that the way to make the muscles large
and strong is to give them regular exer-
cise."

Mr. Senn: "It won't always work.
The muscles of your jaw are no larger
or stronger now, after 16 years of con-
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first became acquainted with them."—
Chicago Tribune.

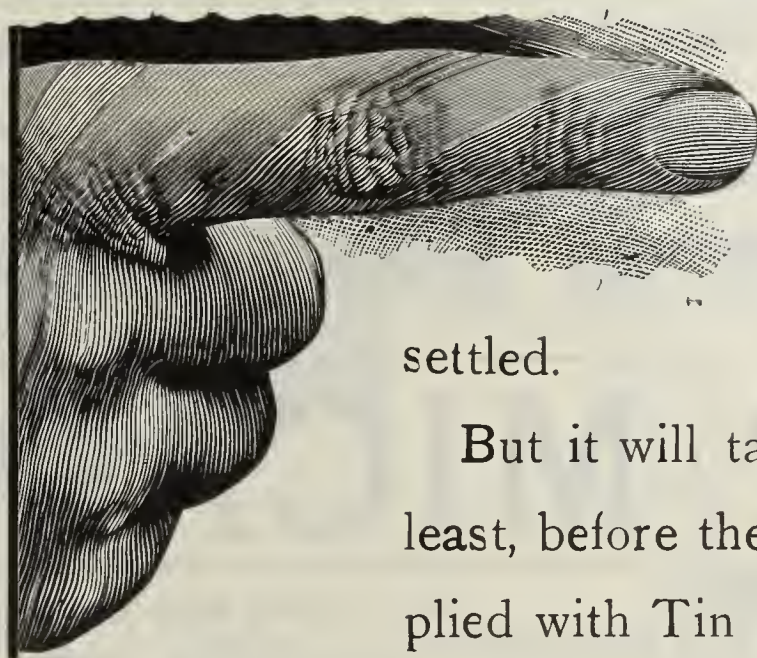
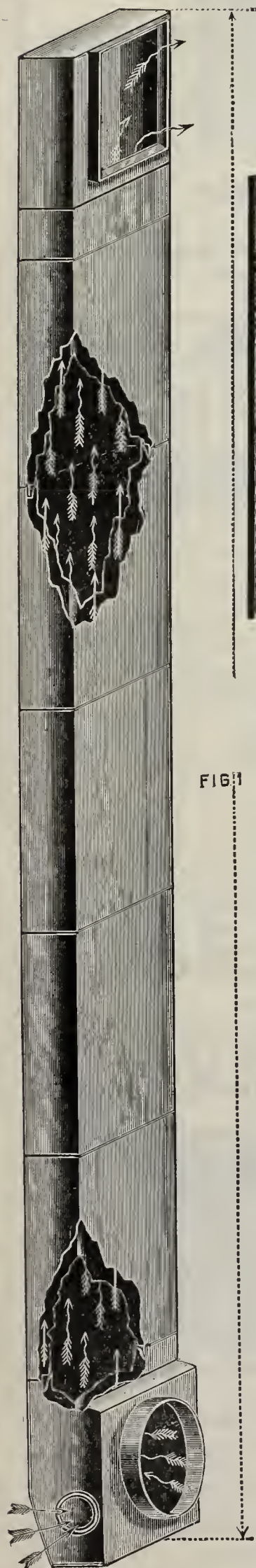
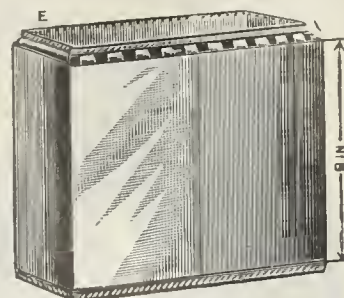
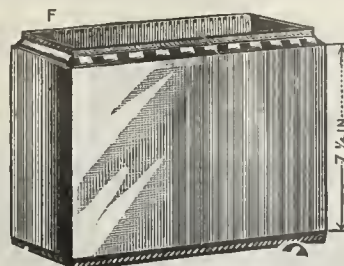
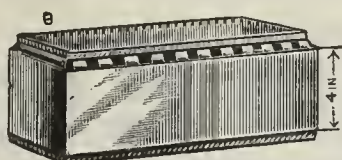
—"Lor', I'd never trust anybody
called Alias. 'Ere's Alias Wilkins,
Alias Blackley, Alias Picklock and
Alias Nighthawk, all 'ad up for steal-
in'."—*Scraps.*

—"WHAT is the plural of man,
Johnny?" asked the teacher of a small
pupil.

"Men," answered Johnny.

"Correct," said the teacher. "And
what is the plural of child?"

"Twins!" was the logical, but un-
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Has now been
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But it will take two months, at
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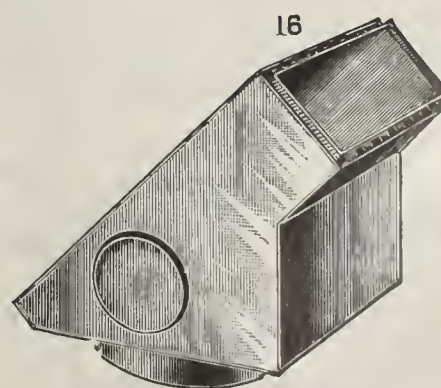
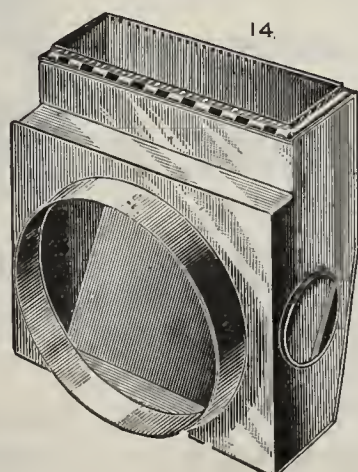
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			2×4	$2\frac{1}{4} \times 5\frac{1}{4}$
Wyoming	-	3.20	3×3	$2\frac{1}{2} \times 4\frac{1}{2}$
			$3 \times 4\frac{1}{2}$	$4\frac{1}{2} \times 6\frac{1}{2}$

THREE POUND—12 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$5.20	$4\frac{1}{2} \times 5$	$2\frac{3}{4} \times 4$
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			$2\frac{1}{4} \times 4\frac{1}{2}$	$2\frac{3}{4} \times 2\frac{3}{4}$
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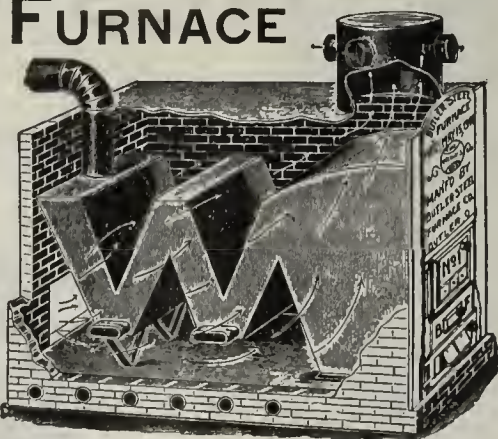
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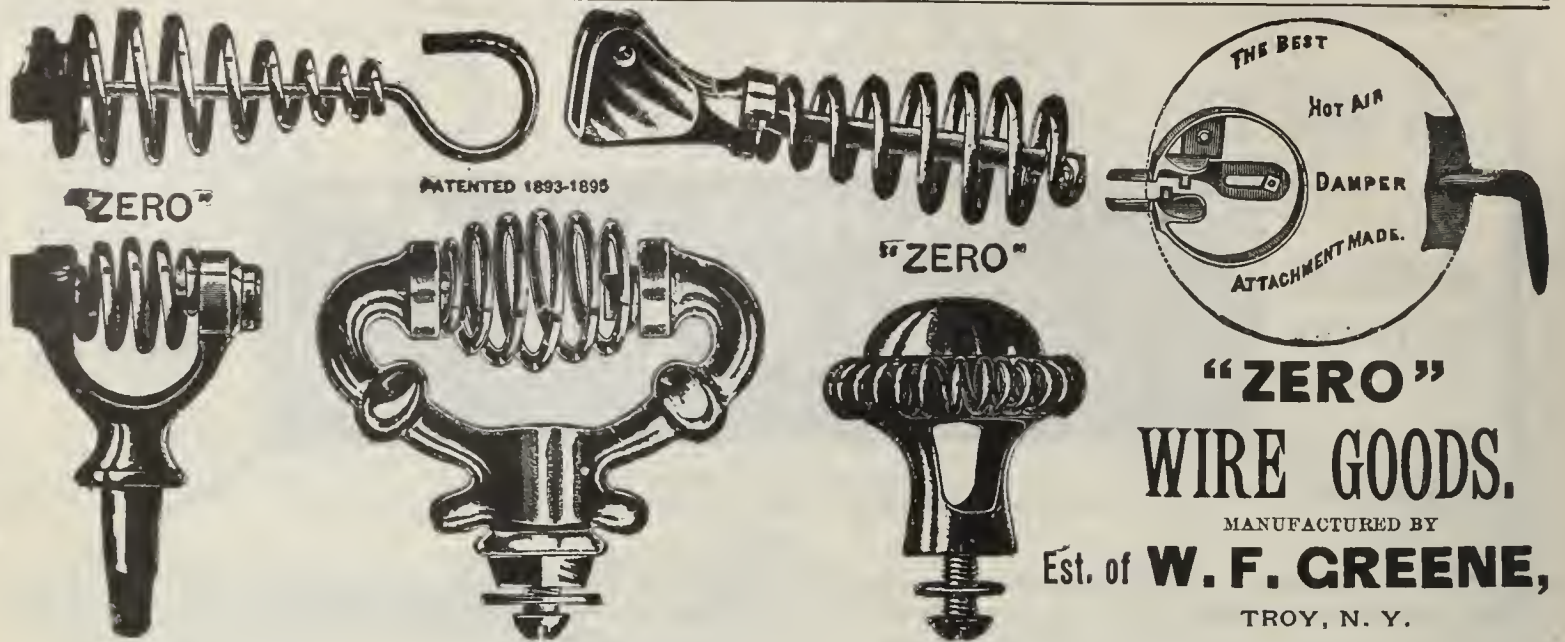


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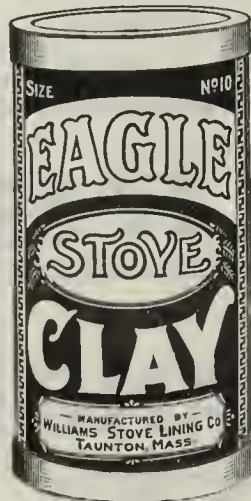


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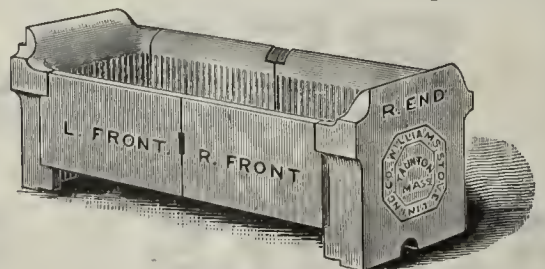
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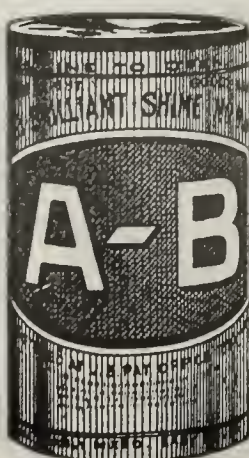
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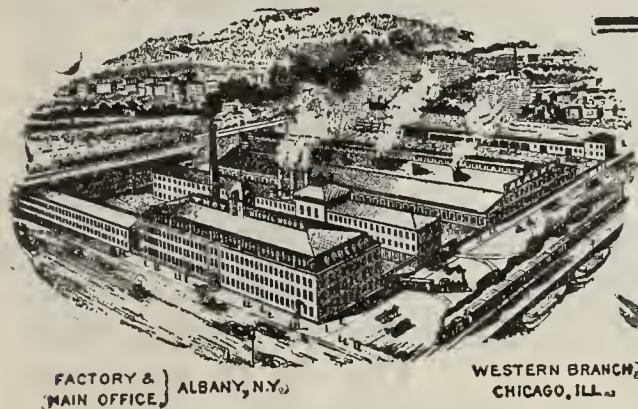
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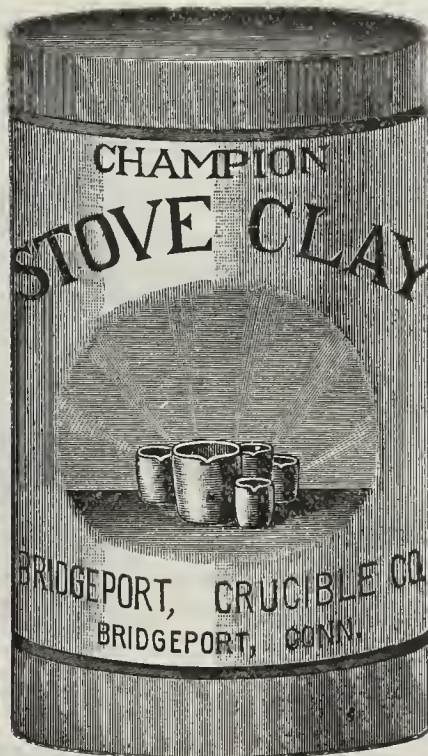
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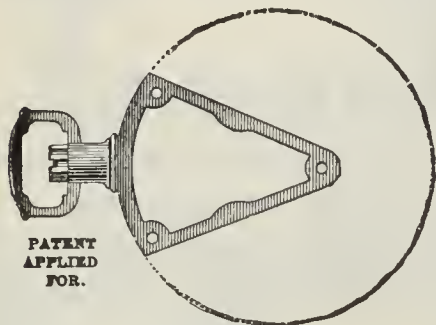
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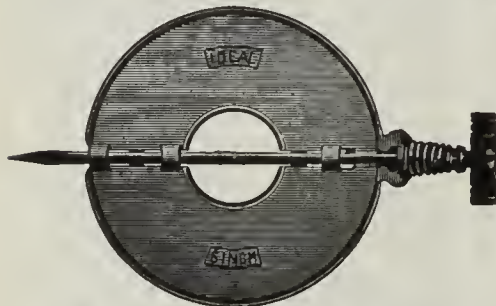
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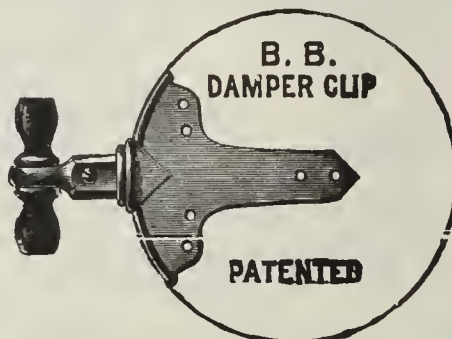
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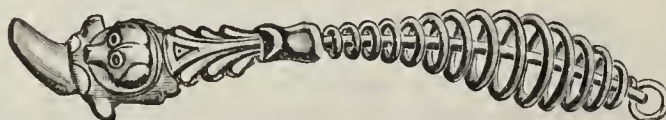
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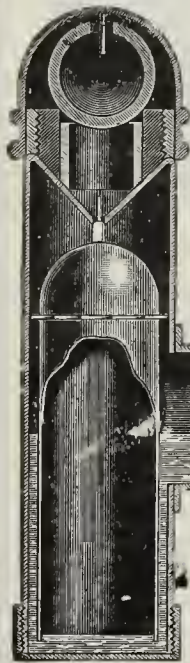


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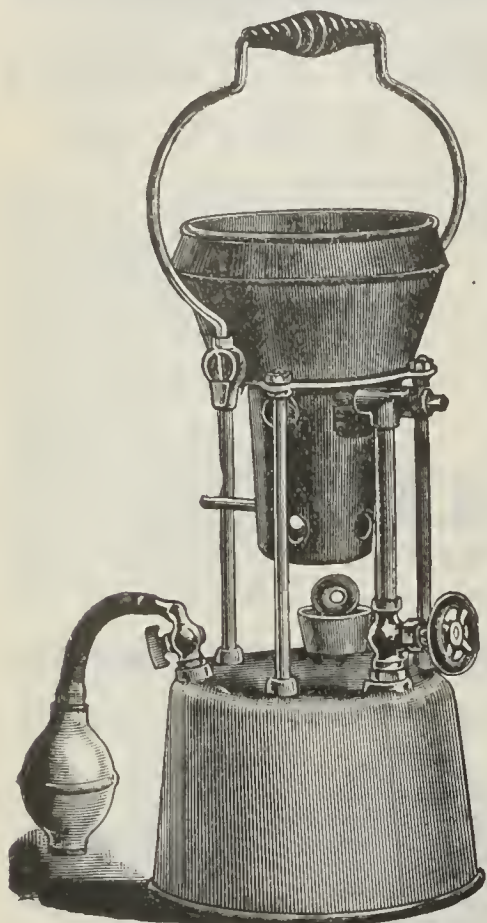
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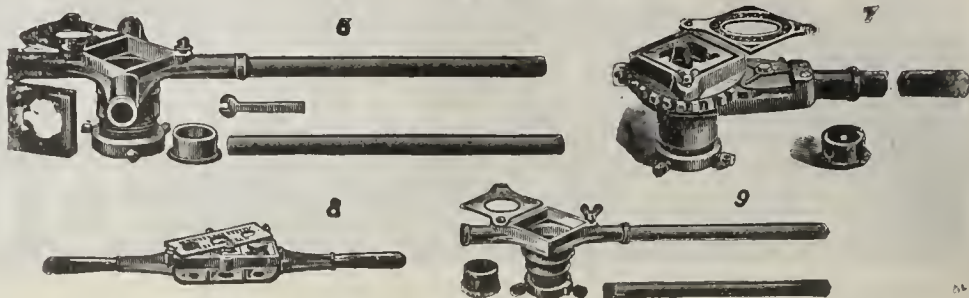
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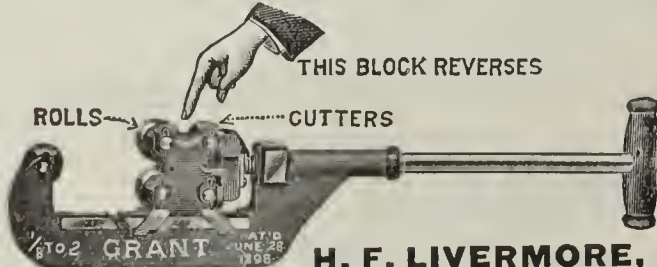
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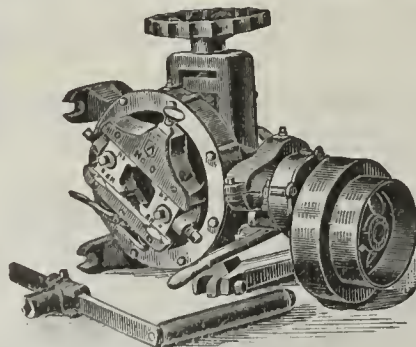
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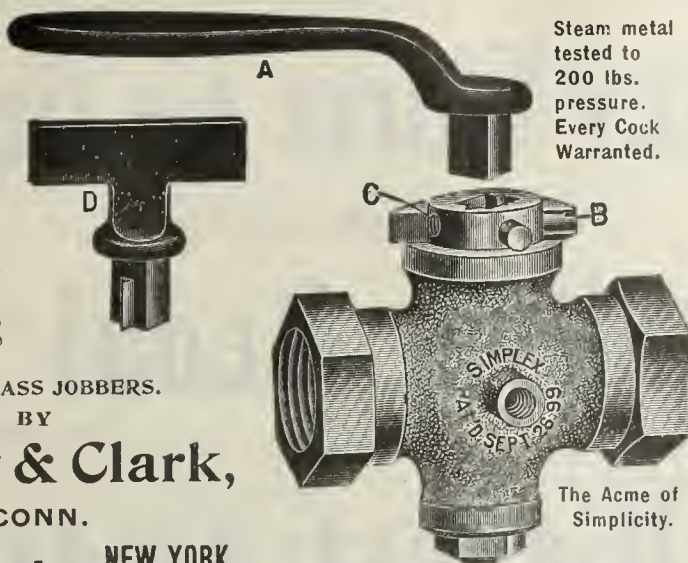
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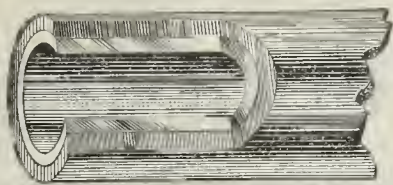
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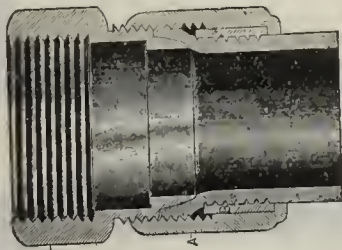
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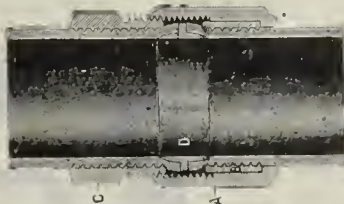
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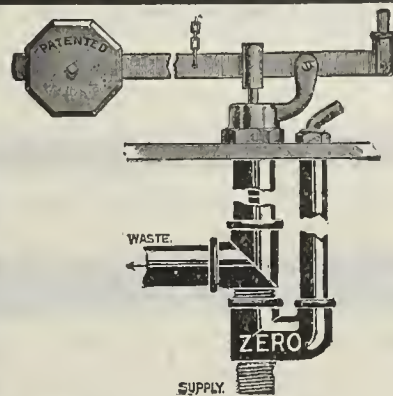
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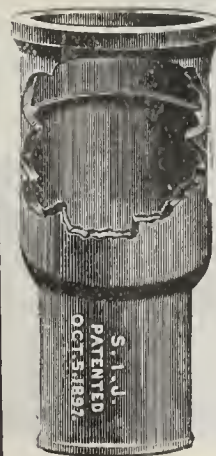
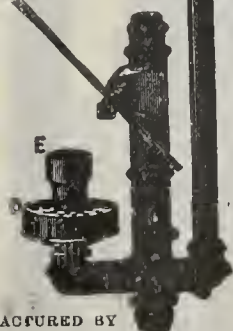
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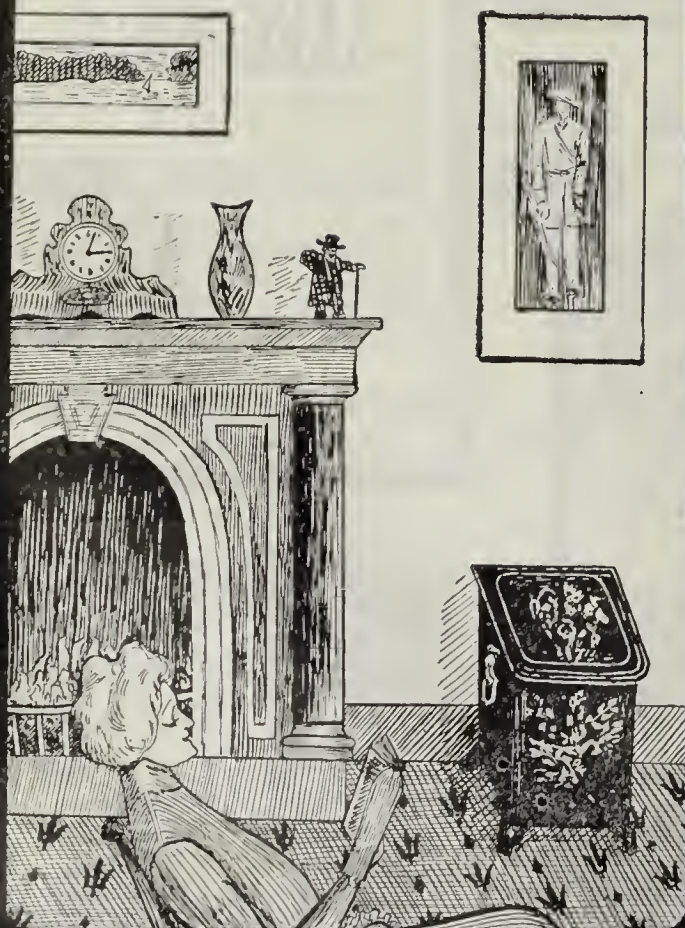
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Opening of the Trade School Season.

The attention of many young men who are ambitious to master some trade as a means of securing a livelihood is now directed to the trade school, this being the time when most of these schools open their course of instruction for the winter season. The advantages derived by those who take a trade school course are demonstrated in the popularity of such institutions wherever they are in operation. When a young man receives instruction in his chosen trade under the superintendence of an expert, who explains the best methods of doing work and watches the pupil so that none of the bad habits of independent study are acquired, it is not strange that the pupil acquires a remarkable degree of proficiency, not only in handling the tools, but in giving a finish to his work that is fully equal to that shown in general practice. From the fact that the courses of instruction almost always include a series of lectures dwelling in detail on the principles involved and explaining the reason for doing work in a given way, it can be readily seen that a knowledge of the trade in all its details, both theoretical and practical, may be impressed indelibly upon the mind of the student in a comparatively short time, while if left to be gained from practical experience in the regular way many important features might still be left untouched. Next Monday night a new season opens at the New York Trade School, which has been the most successful and popular of these institutions. Following the example set by Colonel Anchmuty in founding this institution, several similar schools have been put in operation in the metropolitan district. In a number of other large cities, however, movements to secure trade schools have not met with the same success as has attended the New York Trade School. This is unfortunate for, in view of the passing of the old apprentice system for training young men in the manual arts, the trade school is doing an invaluable work as a substitute for that system. The opposition which has been raised to trade schools on the ground that the ranks of the different trades are already sufficiently filled and the trade school product menaces the livelihood of journeymen already in the field, when viewed in a broad, liberal way, will not be considered a sufficient reason for delaying the early establishment of a well equipped trade school in all of the larger cities. The first consideration should be given to the coming man. It is essential to his moral as well as his physical welfare that he should be as well equipped as possible with the

means of supporting himself in a manner useful to the community. While trade schools already exist in several cities and there is evidence that the number is to increase, their growth has by no means kept pace with the demand. The manual training school as a part of the common school educational system, the trade school and the advanced technical school are all parts of a new educational system that cannot be too widely adopted in a progressive country.

Pig Iron Production Increasing.

The monthly blast furnace statistics of *The Iron Age* show a moderate increase in the capacity of the active plants on October 1, as compared with the figures for September 1. At the opening of this month there were 246 pig iron furnaces in blast, with an aggregate weekly capacity of 307,982 gross tons, as against 255 furnaces with a capacity of 299,861 tons on the first of last month. This increase is due principally to the resumption of a few important plants in the Central West, some of which were idle during the strike, and to the starting of the large new blast furnace of the Sharon Steel Company. Meanwhile, a number of smaller furnaces have gone out of blast. Notwithstanding this increase in output, furnace stocks declined from 380,074 tons on September 1 to 361,593 tons on October 1, a decrease of nearly 20,000 tons. This shows the statistical position of pig iron to be exceedingly strong. Indeed, for months past the country, as regards pig iron, has been running on very close to the wind. It is doubtful whether there is more than two weeks' stock of pig iron in producers' hands at the present time, which is a very narrow margin to provide against accidents or contingencies, particularly since it is known that consumers are carrying very little iron. Business in all classes of iron products is manifestly in a very good condition, and there is some idea that higher prices may be looked for. The feeling among some of the larger interests, however, is that values are now as high as is reasonable. In fact, the belief is more and more frequently expressed that, so far as the iron trade is concerned, we are on the crest of the wave, and that it will be doing well if the present level of prices can be maintained.

The Earnings of the United States Steel Corporation.

The recent report of the earnings of the United States Steel Corporation for the first six months of their existence has brought out a flood of comment and commendation. Yet the figures have been received by many with a reserve bordering on disbelief, chiefly because the earnings for August and September failed to show any falling off as the result of the strike. No official explanation of the data presented was given, but we understand that the earnings of the months affected by the strike would have been very much larger but for that struggle. The earnings of the United States Steel Corporation are the aggregate of the profits made by the constituent interests. A preliminary estimate is made by each of these concerns on the basis of the actual returns for the first twenty-five days of the month, and

this was the figure adopted for September. Past experience has shown that the methods of accounting are so complete that, barring accidents, the preliminary figures vary but very little from the final returns. The earnings of the constituent companies are based on the shipments of product. Therefore the concerns affected by the strike who continued to ship product from stock continued to show earnings even after they had largely ceased production. A peculiarly interesting point in connection with the figures submitted, however, is that the earnings of the ore mining and transportation interests were particularly heavy during the months when a part of the finishing capacity was idle. There went into the earnings, therefore, the profits on hauling by railroad and transporting by the lakes ore which will not enter into the manufacture of iron for months to come. The earnings of the United States Steel Corporation will be swelled during the season of navigation by those shipments and it was the returns from this source which went far toward obscuring the effect of the strike. Of course the tonnage of finished material which it was impossible to deliver owing to idleness will go to increase the receipts during the winter period, when usually the demand is somewhat slack.

Radiator Valves.

Some little stir was caused a while ago among the manufacturers and distributors of radiator valves by irregularities which prevailed in the prices of these goods in certain localities. At some points in the East these valves were quoted at prices at which they could not be replaced, and various heating contractors were fortunate in being able to buy stock at figures at which the manufacturers were selling to jobbers. This condition, however, seems to have changed of late. At the present time manufacturers of radiator valves report all the business they can handle at prices in advance of the quotations that made the stir. Owing to the various grades of these goods on the market, it is not out of place to suggest to the steam fitter, particularly at this time, that he should be sure of the quality of the valves quoted to him at low prices. It is well known to all experienced men in the trade that there are radiator valves and radiator valves. Some steam fitters, who enjoy special consideration for their bld's, never use any but the best valves; others are apt to buy their supplies in the cheapest market, irrespective of quality. Some valves have a full and ample body of good metal of approved design and first-class workmanship and finish. There are also valves made for a given size of pipe, but having bodies no larger than valves of standard grades one size smaller. In the latter case, even though the metal and workmanship may be good, the valves must either be unable to stand the higher pressure or else they are restricted in their passages. In either case they are not worth the lower prices quoted in comparison with the heavier goods. There are plenty of good full sized valves on the market, and the steam fitter should not furnish a scant pattern to his customers for the sake of the few cents that are saved thereby.

Apparatus for Using Oil as Fuel.

Since Texas and California have become oil producing States there has been a considerable demand for apparatus for using this oil for fuel purposes, owing to the high cost of ordinary fuel—coal and wood—in those sections. Already some success has been attained in the equipment of locomotives and power plants with suita-

ble burners for this purpose. The problem of equipping such apparatus has now come to the engineer and its solution may be safely left with him. There is an equally important demand for a simple, safe and economical method of using this same fuel in the cooking stove, heating stove, hot air furnace and boiler used for the heating of buildings. Inasmuch as these domestic appliances are quite generally left in the charge of the women folks it is essential that the equipment of the kitchen stove, in particular, must be simple so as to be readily understood and operated, and safe beyond the requirements of the boiler room of the power plant. Prior to the advent of natural gas, and since it has become the popular fuel in the Central West, many power plants were equipped with a successful fuel oil burning apparatus. Efforts to similarly equip the heating and cooking apparatus in the home are not wanting, and it is probable that some of those who have failed to find the encouragement in the old fields may secure success in the newer fields by adapting their devices to the requirements of the local fuels. The stove dealer and plumber will naturally be called upon to equip stoves and heating apparatus with such burners and they can be relied upon to lend their assistance if reliable fuel oil burners are brought to their attention. Already the stove dealers and plumbers in these fields are making inquiry as to where reliable apparatus of this character can be secured, which is a reflection of the demand made upon them by their customers.

Business failures in the United States, reported by *Dun's Review* for the first nine months of 1901, number 8144, with an aggregate indebtedness of \$97,856,416. In the same months of 1900 the number of failures was smaller, 7895, but the amount of liabilities was much heavier, \$133,234,988. There were 1906 failures of manufacturing concerns in the first nine months of this year, with an indebtedness of \$32,758,427, against 1759 for \$27,222,855 last year, and 5842 traders suspended owing \$35,320,511, against 5694 last year for \$39,564,781. Thus it appears that, despite the numerous small failures, the aggregate indebtedness of the failing concerns was much lighter this year than in 1900. One explanation of the increase in the number of failures appears to be that the general prosperity of the country encouraged a number of persons to embark in business on their own account without sufficient capital or experience, and lacking, consequently, qualifications that are indispensable to success.

Higher Commercial Education in Canada.

In response to an invitation addressed by the Governor-General of Canada to the various universities of the Dominion to take into consideration the question of higher commercial education, the authorities of the University of Toronto have arranged for a two-year course of study along that line. The course is not that of a business college, but one calculated to give a better mental training, a broader outlook and considerable information valuable and necessary to a modern business man. The subjects embrace commercial geography and industrial history (trades unions, trusts, &c.); wages and prices; tariffs and transportation; banking organization, and commercial law, which form one group of study. A second division consists of chemistry, electricity, geology or mineralogy, history and principles of architecture or mechanical drawing, commercial mathematics. A third is represented by languages, English composition and a study of some English authors, and any two of the modern languages, French, German, Italian and Spanish. Any person may attend the lectures by the payment of a small fee. The Toronto Board of Trade has donated \$250 by way of prizes for students taking the highest standing in the course.

GEORGE W. WALKER.

The death of George Willis Walker, president of the Walker & Pratt Mfg. Company of Boston, Mass., removes one of the most prominent and highly respected members of the New England stove trade. Mr. Walker died on Friday, October 4, at his residence in Malden, Mass. He was born August 27, 1827, in Exeter, about 20 miles west of Bangor, Maine, and was educated in the public schools of that place. He worked upon his father's farm until he was 18 years of age, when he left home to seek his fortune. In 1845 he went to Boston with only \$6 in his pocket, but with an unlimited amount of strength and perseverance. After three years of hard struggle for a living he became clerk in a stove store. Subsequently, he was employed by three different stove dealers in Boston, each one of whom was employed by him at a later period. In 1853 he accepted a position of responsibility with Johnson, Cox & Fuller of Troy,



GEORGE W. WALKER.

N. Y., predecessors of the Fuller & Warren Company. After five years in Troy, where he was married in 1857 to Miss Elizabeth Kinnicutt, he returned to Boston to engage independently in the stove and furnace business. Mr. Walker opened a store at 15 Union street and soon established a substantial business. He passed through a number of crises in the financial world without failure of any kind. Subsequently he removed to 31-35 Union street, where for more than a quarter of a century the Walker & Pratt Mfg. Company have done an extensive business. Mr. Walker was the president and chief executive of the company since their formation in 1874. He possessed a marked inventive ability, and few men in the trade brought out so many new and valuable devices and improved construction in connection with stoves, furnaces and heaters. Mr. Walker in many ways was a pioneer in the stove manufacturing industry and was a recognized leader in the constructive as well as in the selling department of the business.

In 1869 he established his residence in Malden, and his home became a center for the cultivated people of the town. His wife died in 1879, and he subsequently married Mrs. Doreas E. Hagar of Malden. Mr. Walker held many public offices in his town, serving as chairman of the Board of Selectmen, as Sinking Fund Commissioner, Water Commissioner and trustee of the Malden Public Library. He represented the city of Malden in the

State Legislature in 1885 and 1886, and served as a Presidential Elector in 1892. Among his associates were many men of note in the State and in the country, and he held the warm esteem and affection of a large circle of business, political and social friends. He was a member and generous supporter of the First Congregational Church in Malden and was also very prominent in Masonic circles. A widow, three daughters and a son survive him. The latter, A. W. Walker, is a member of the Walker & Pratt Company. The funeral, which was held in his late home in Malden on Sunday, October 6, was attended by several hundred persons, including delegations from various public bodies with which he was connected, the Mayor of Malden and the members of the city government, and a committee, composed of A. N. Parlin, E. A. Stevens, B. P. Lovejoy and D. W. Cushing, especially representing the stove trade of Boston. The interment was made the next day at the family lot in Woodlawn Cemetery.

At a meeting of the manufacturers and dealers in heating and cooking apparatus, with A. N. Parlin as chairman, held on Saturday, October 5, at the office of the Magee Furnace Company in Boston, to take action on the death of Mr. Walker, the following resolutions were unanimously adopted:

Whereas, God, in his Providence, has called from us our friend and business associate, George W. Walker, it is with sincere sorrow that we meet to mourn the loss of one who for more than 40 years has been conspicuous in all the activities pertaining to our line of business, and it is hereby

Resolved, That we desire to place on record a tribute to his memory. A man of sterling integrity and unblemished reputation, in social as well as business life, he has always held the complete confidence and esteem of all his associates, and we feel that he will long be missed from the place he has so ably filled. We offer to his family our fullest sympathy in their affliction, but rejoice with them and his many friends that he leaves behind him the memory of a life well spent, and a reputation of which they may well be proud.

Resolved, That these resolutions be spread upon the records, and copy of same be sent to the family of the deceased, and also published in the daily papers.

THE WESTERN STOVE TRADE.

All Western stove manufacturers report a continuance of the highly gratifying conditions which have been prevailing in the trade for several weeks. The demand is not only large, but is developing the scarcity in some classes of stoves which was pointed out in these columns during the summer as very likely to occur. It was seen at that time that dealers were not anticipating their fall requirements to the extent which seemed to be justified by the conditions prevailing in the general iron and steel trades. The stove business not only depends on the disposition of the dealer to place orders, but it also depends for its satisfactory course upon the ease with which necessary materials can be obtained. The strikes during the summer months caused considerable interruption to the delivery of some very important materials which are needed by stove manufacturers in finishing their goods for the market.

Present appearances lead experienced manufacturers to believe that this year will prove to be one of the greatest ever known in the stove business. The past may have seen periods in which prices were much higher and profits were decidedly greater, and when some establishments did a considerably heavier business than they will do this year, but, taking the trade as a whole, the volume of business will be exceedingly heavy and, in comparison with some experiences in the past, the results in the way of profits will be fairly satisfactory. This belief in an unusually satisfactory year is based, of course, on the expectation that the good demand for stoves will not only extend through the present month, but will also be continued well into November.

Matters are now shaping themselves for an advance at the beginning of the coming year in sheet goods and possibly in cast goods. While some manufacturers of steel ranges and oak stoves have been obliged to withdraw their lowest discounts, because of the short supply of sheet steel, which compelled them to pay high prices

for what they were able to pick up, it seems that the great majority had so provided themselves with good stocks that they were able to go through the season without feeling the necessity of advancing their prices. When the conditions now obtaining are faced for another season they will be more inclined to consider the increased cost of manufacturing and are very likely to decide that an advance in the selling price will be necessary. This may bring about also some stiffening in the prices of cast goods, even if pig iron is not so much higher in price as to compel an advance on that account. Southern foundry pig iron, which enters so largely into the production of Western stoves, now brings 75 cents to \$1 per ton more than the prices ruling four weeks since, and the tendency still appears to be upward as a consequence of the heavy buying movement coming from all classes of consumers.

PROPOSED STOVE MANUFACTURERS' STEEL PLANT.

Those who attended the annual meeting of the National Association of Stove Manufacturers at Boston will remember the address of President Stanhope Boal, and his allusion to the use of sheet steel by stove manufacturers. The excellent suggestion made by Mr. Boal has been taken up, says the *Leader-Dispatch* of Piqua, Ohio, and a company are being formed who will probably have a number of stove manufacturers as stockholders. It is said to be the intention of such a company to build a plant, at a cost of about \$750,000, to consist of open hearth furnaces, rolling mills and planishing and galvanizing works, capable of manufacturing the various grades of steel now used by stove, furnace and range manufacturers. Men who are thoroughly familiar with the manufacture of refined, planished and polished steel and other grades of sheets are said to be largely interested in the formation of this company as stockholders and officers in the management of the plant, which will have a capacity for an annual output of about 25,000 tons.

Stove manufacturers have complained of their inability to obtain the highly finished sheets used in some goods, owing to their being manufactured at comparatively few mills, so that orders must be placed several months ahead in order to obtain stock. This trouble was especially emphasized during the recent strike. Mr. Boal's suggestion is that the plant be run on the co-operative plan, the product to be consumed by the stockholders of the company, and any profit that may be derived to be paid back in dividends.

Garland Heating Stoves for Wood.

The Michigan Stove Company have issued a special number of their *Garland Magazine*, devoted to heating stoves for wood. The stoves illustrated in this publication are the Fireside-Garland, Premium-Garland, Yale-Garland and Horizontal Oak-Garland. The Fireside-Garland is presented as a new departure in wood heaters. It has an oblong body made of sheet steel, presenting a broadside front, with ornamental cast base and cast top and a nickeled foot rest in front. Three styles are made—namely, with top feed, with end feed and with grate and ash pan—thus satisfying all requirements. It is fitted with the company's own air tight joint and is claimed to have remarkable fire retaining qualities. The Premium-Garland is an oval air tight, having a sheet steel body, cast iron top and base, a highly ornamental cast iron front, extending from top to bottom, and a nickeled foot rest on each side.

The Yale-Garland has a square cast body of ornamental pattern, full nickeled top and base, a mica front with a nickeled reflector above and a nickeled foot rest in front. It is made with grate and ash pan, or with solid bottom. Heat is thrown to the base through flues in the front of the stove. The Horizontal Oak-Garland is a direct draft and revertible fine stove of the Todd type, largely constructed of cast iron in ornamental patterns, having an urn on top and a nickeled foot rest on

the side. The body is made of Wood's cold rolled boiler iron. A hot air circulating fine enables it to be converted into a double heater for heating another room.

The Highland Oak.

One of the latest additions to the extensive line of heating stoves to which the Buckwalter Stove Company of Royersford, Pa., are directing the attention of the trade is the Highland Oak, a full revertible flue construction for which strong claims are made. It is intended for using as fuel hard coal, soft coal, coke, wood or any other material of a combustible nature. The ornamentation is rich and effective, nickel playing an important feature in the embellishment of the exterior. In its construction an air tube or duct encircles the top of the fire pot, admitting heated air in small jets into the fire chamber to mingle with the gases liberated from the fuel. This results, it is claimed, in a perfect combustion and active consumption of the gases, thereby converting them into heat instead of allowing them to escape unconsumed to the smoke flue. The company claim that this fuel gas generating device contributes greatly to efficiency, economy, cleanliness and healthfulness. The fire pot is heavy and durable, yet, when desired, the company can furnish either brick or cast iron linings. The upper door can be furnished solid or with mica illumination and is provided with a shield to prevent the escape of the smoke into the room when the feed door is thrown open. The ash pit is large, the magazine of extra capacity, the cam damper is a feature of both feed and ash doors and the outside body of the stove is of heavy planished iron. The Highland Oak is made both as a single and double heater and is offered in three sizes fitted with the well-known Ransome duplex grate.

Thatcher Furnaces.

The last of the new catalogues of the Thatcher Furnace Company, 240 Water street, New York, which has just made its appearance, relates to the Thatcher warm air furnace. It was preceded by a catalogue devoted to the Thatcher steam and hot water heaters, and another to Thatcher ranges. The furnace catalogue consists of 40 pages, 10½ x 7½ inches in size, bound in a light brown cover, having a design in a three-color effect. The introduction calls attention to the steady popularity of the Thatcher furnaces from their conception. The place of honor in the catalogue is given to the Thatcher tubular furnace, in which the exposure of a large heating surface is a characteristic feature. The fire pot is of what is known as the Porcupine type, being covered with prong extensions, which prevent the overheating of the fire pot and utilize the heat by transmitting it to the air which comes in contact with it. The combustion chamber has an increased heating surface through the passage through it of a series of boiler tube flues. The air in passing through the furnace not only passes over the outer surface, but up through these hot air flues. The gases from the combustion chamber rise through a series of flues to a circular radiator. Broken views of the construction are presented, so that the indirect passage of the products of combustion may be followed, and also the air travel. The furnaces are adapted for either portable or brick setting. A large double page engraving shows two portable furnaces connected together at the top in battery form for large work. This furnace is made in eight sizes, six of which are provided with a water heating apparatus, to be used as a combination heater. A special grate construction is provided, which facilitates ease in the care of the fire. It also provides for the entrance of a large quantity of air to the fire to promote combustion. This feature of the furnace has been found to be very popular with those who use it, and to add very materially to its efficiency.

The Winner is a new furnace recently brought out by the house. It consists of a corrugated fire pot with a large combustion chamber having flues leading into the circular cast iron radiator. The Scorching furnace is one with an established reputation, having a cast iron fire pot and a steel radiator. The Meteor and the Active are fur-

naces designed for those who have to meet sharp competition in their trade.

Several pages are devoted to the Miller patent ventilating system, for use in connection with hot air furnaces, by means of which the foul air is exhausted from the various rooms of a building, aiding the heating by facilitating the inflow of fresh, warm air. An engraving shows a furnace equipped with this system connected with one room in which the air, by absence of a tint, is shown to be perfectly fresh, and connected with another room in which there is an open grate for ventilation, showing by the tint that only the upper portion of the room is ventilated, while the effect in the hall, which is not ventilated by the Miller system or the grate, is illustrated by the darker tint of that apartment. Another page gives the plan of the basement, with a complete heating and ventilating system.

A number of pages are occupied by useful information to furnacemen in selecting the size of cold air ducts, arriving at the capacity of a furnace, with the number of hot air pipes it will supply, the dimensions of brick cold air pits, and other suggestions of a practical character. A complete price-list, with cuts of registers and ventilators, is presented. On the closing pages are printed several testimonials, which are presented in a unique manner, well calculated to attract the attention and interest of the prospective purchaser. On the last page is a general view of the company's extensive manufacturing plant, at Newark, N. J.

The Quincy Foundry & Novelty Company.

We have received from the Quincy Foundry & Novelty Company of Quincy, Ill., a copy of their catalogue for the season of 1901-1902, relating to the leading lines of steel cook stoves and heaters which they manufacture. They call special attention to the Noxall, a steel cook stove intended for using coal or wood as a fuel. It is made of heavy polished blue steel, has extra large pouch feed, Duplex grate, cast flue back and flue strips, spring balanced oven door, large ash pan, extension fire box for wood and is lined throughout with asbestos mill board. One of the important features of this stove is the square oven finished in aluminum. The claim is made that the stove occupies less space in a kitchen than a steel range, while furnishing equal cooking facilities. Some interesting comments are presented on the subject of air tight heaters for wood, illustrations being presented showing an extensive assortment of these goods. Attention is also called to the Keepsake cast top wood heating stoves, and also to the Eclipse air tight circulating heater, intended for using coal as a fuel.

ODD PLATES.

We are advised by the Michigan Stove Company that Garland Stoves and Ranges were awarded first prize and the only gold medal at the Pan-American Exposition, now in progress at Buffalo.

"WHY THE COOK PREFERS THE CRAWFORD," is the title of an interesting pamphlet which is being distributed by the Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass. The Crawford Range is illustrated and described at considerable length, each illustration showing the cook pointing to the particular feature described in the text beneath. Testimonial letters from teachers of cooking and housekeeping are given showing the estimation in which the Crawford is held by them. Accompanying the pamphlet is a circular showing the Crawford Oak Stove, designed for using wood, coal or, as the manufacturers put it, "anything that will burn," as a fuel. The Stove is referred to as being of new design and rich ornamentation. The fire pot is deep and heavy, like that of a furnace; the grates are strong and durable and are of two styles, draw center and triangular. There is an ample clinker space for poking and slicing the bottom of the fire; the draft wicket is operated by a screw and closes air tight, and the heavy steel body of the Stove is tightly fitted at top and bottom.

At the County Fair, held the last week in September,

the Lehigh Stove & Mfg. Company of Lehigh, Pa., had a very interesting exhibit of high class Ranges and Heating Stoves, which were the center of attraction to a large number of visitors. The exhibit included, among others, the Home Lehigh, New Lehigh, Orient Lehigh, Alma Lehigh, Rose Lehigh and Glen Lehigh. One of the features of construction to which special attention was drawn by the representatives of the company was the Star Sectional Perforated Cover, a device recently patented and which has been applied to the Lehigh line of Ranges. The perforated cover consists, in reality, of two covers, one within the other, the inner one being perforated. The point is made that by the use of this cover the coal gas cannot escape into the room, as there is always a down draft through the perforations. When the fire is fixed for the night the inside covers may be left off as far as necessary, thus deadening the fire and arresting unnecessary combustion of fuel. The first week of October the company also exhibited their goods at the Allentown Fair, where they won many favorable comments.

WM. RESOR & Co., Cincinnati, Ohio, have issued a daintily printed little pamphlet calling attention to a few of the many Monitor Ranges and Heaters which they manufacture. The special points embodied in the Monitor Steel Ranges are covered in a way to interest the enterprising dealer, while the comments upon the Monitor Gas Range are such as to bring out prominently its important constructive features. The Monitor Base Burner, for hard coal, is the leading number of the company's High Art series of Parlor Stoves, and is offered in three sizes. The Monitor Oak is shown in its new dress for 1901. While it is of graceful proportions and handsome ornamentation it embodies the latest features of internal arrangement. The Monitor Hot Blast, made in three sizes, for coal, is illustrated and described, as is also the Peerless Oak.

FRANK BRIELMAIR, formerly with Bridgeford & Co., Louisville, Ky., informs us that he has engaged with F. & L. Kahn & Brothers, Hamilton, Ohio, as foreman of their Steel Range and Sheet Iron Working department.

A FOUR-PAGE FOLDER, which is being sent out by the Enterprise Stove Company, Vincennes, Ind., calls attention to the Domestic Star Steel Range and to the Star Radiator, a handsomely ornamented Parlor Heater. The Range is offered in several sizes and the usual modifications. It is of attractive exterior, nickel being judiciously employed, and forms a striking contrast to the dark surfaces of the Stove. The Star Radiator, the company point out, is not an "air tight," but is constructed on entirely different principles. It is made in two grades, and as a single and double heater.

THE STANDARD STEEL RANGE MFG. COMPANY, Cleveland, Ohio, are sending out a 30-page pamphlet calling attention to the Standard line of Ranges, which they manufacture in many varieties. The important features of construction are described in a way to interest the trade, and there are also general instructions for operating a Stove in order to get the best results. The goods shown are of attractive exterior and embody the latest improvements. They are offered in several sizes to meet varying requirements. A feature of the publication is illustrations of the fire boxes used in the World's Standard and Standard, Jr., lines. The catalogue is neatly printed and bound in illuminated covers, the design representing a Standard Steel Range in operation.

THE KALAMAZOO STOVE COMPANY, Kalamazoo, Mich., contemplate the erection of a brick factory, 122 x 300 feet in size and two stories in height, which is estimated to cost \$65,000.

THE PURE AIR STOVE COMPANY is the name of a concern recently incorporated at Philadelphia, Pa., with a capital stock of \$2000.

THE JOLIET STOVE WORKS, Joliet, Ill., suffered some damage from a fire which occurred in their factory on Friday night, October 4. The company advise us that it is impossible at this time to determine what the exact damage may be. While this damage is considerable, they state that shipments of Stoves will not be interrupted to any extent. A fire in a manufacturing estab-

ishment is always unwelcome, but coming at this time of the year in a Stove works it is particularly unfortunate. We are pleased to learn that the company's operations will not be seriously interfered with. The dispatches sent out from Joliet to the daily press have, as usual, very greatly exaggerated this occurrence. The company have a very large clientage, who will be glad to know that the trouble is by no means so great as the reports which have been sent out would indicate.

COLEBROOK'S Asbestos Furnace Cement and Stove Putty forms the subject of an illustrated blotter, which is being distributed by W. H. Colebrook Sons & Co., Syracuse, N. Y. The Cement is put up in all sizes of removable cover cans, tubs, barrels and half barrels.

AYLING BROTHERS, 14 Haddon avenue, Chicago, Ill., report that their trade in A B Stove Polish, both liquid and dry, has been very large, some of the largest Stove manufacturers, as well as dealers, duplicating their orders constantly, showing that they are well satisfied with the preparation. The firm's plant is now complete with the latest machinery and modern improvements. They are provided with 16,730 square feet of ground, with 10,000 feet of working floor space, and are able to fill all orders promptly.

We are advised by the Utica Heater Company, manufacturers of the Superior Steel Furnaces, Utica Heaters and a very extensive line of Heating Apparatus, that their exceptional facilities and good stock on hand enable them to make shipments the same day order is received. This promptness in filling orders appears to be appreciated by the trade at large, from the fact that the Utica Heater Company during August and September nearly doubled their business, as compared with the corresponding months last year. To maintain the reputation of the company for prompt shipments their plant has been run nightly since early in August.

THE AMERICAN STOVE & RANGE COMPANY, Keokuk, Iowa, report a large demand for their well-known line of Stoves and Ranges.

HARPER & MUNSELL, who have heretofore been conducting a Hardware business at Cameron, Mo., are reported by a local paper to have sold their Hardware business with the purpose of devoting their entire attention to the manufacture of Stoves.

A LETTER from the Michigan Vapor Stove Company, Grand Rapids, Mich., informs us that L. E. Ambrose will again travel in the interest of their goods in Illinois and Iowa.

THE DANVILLE STOVE & MFG. COMPANY, Danville, Pa., are bringing their Beaver Square Parlor Heater to the attention of the Stove dealer by means of a pink circular printed in red and black. The Stove is of pleasing design, elaborately nickel trimmed, and has a large mica illumination. Its merits are a full revertible flue construction, a hot air chamber for heating an upper room, a convenient grate and a construction that is easy to repair when natural wear makes it necessary. It thus has all the essentials to enable the dealer to push it with confidence and satisfaction to all concerned.

STOVE dealers who sell Gas Heaters should secure one of the 28 x 41 inch hangers of the Ideal Gas Heater, issued by the Ideal Mfg. Company, Detroit, Mich. It is printed in red and black on a yellow ground and shows the trade-mark of the house under the words "Ideal Gas Heater" in large letters. The picture shows one of the Heaters, 30 inches high, with a little girl and a fox terrier beside it. The hanger is well calculated to suggest to all who see it the usefulness and convenience of a Gas Heater. Another hanger of the same size in olive, red and black presents as conspicuously the desirability of possessing an Ideal Gas Range, which is made with baking oven, broiler, top burners and all the usual conveniences.

THE PITTSBURGH STOVE & RANGE COMPANY, Pittsburgh, Pa., are sending to the trade a four-page folder showing half-tone engravings of the Corona Cinderella, a handsome square Parlor Heater. The design is very pleasing and the Stove is elaborately embellished with nickel plating. An exceptionally large mica illumination is also a feature. The beauty of the Stove is

equaled by its features of merit, which includes a base burner of full revertible flue construction and arranged for heating an upper room by means of hot air. The folder enumerates the excellent points of the stove, which has every qualification of leadership on the sample floor of the Stove dealer catering for the best trade.

A CIRCULAR issued by the Quincy Stove Mfg. Company of Quincy, Ill., calls attention to some of their most recent productions in the way of Heaters. Prominent among these is the Novel Monogram, an attractive Todd Stove made in two sizes and having a capacity for burning wood 20 and 24 inches in length. The construction, which is referred to by the manufacturers as something entirely novel, is such that the heat circulates between the linings and the jacket the same as in a horizontal Todd. Another novelty is the Bi-Me Monogram, belonging to the same general class of Stoves. This Stove is also made in two sizes, but has a capacity for burning wood 22 and 26 inches in length. It has large front feed, cast top and bottom, cast linings, polished steel body, ash guard under the feed door, screw damper and steel top ring. The circular also calls attention to the Quincy Beauty, the Quincy Faultless and the Quincy Peerless, the latter resembling an Oak Stove in its general appearance.

Combined Check and Voucher.

Logan-Gregg Hardware Company, Pittsburgh, Pa., to both simplify and shorten routine office work as to receipts for remittances, have for some time been using a form of bank check, here reproduced, which is also designed as a voucher or record of the transaction for future reference. What they claim for this method is that in one document is shown the amount paid, when, by whom, to whom, what for and through what channels. When the check is returned to the issuing bank and ultimately to the merchant the canceled paper, on which it is intended the dates of invoices paid shall appear, when practicable, proves that the creditor or payee received the money and renders unnecessary the sending of a separate receipt. Some favorable features are the discontinuance of formal letters acknowledging the remittance, the saving of time, labor, paper, envelopes and postage, which in large corporations or businesses is important, while subsequent reference shows at a glance the main parts of the entire transaction in one compact paper of uniform size, which is easily filed, stored and cared for. The form can be made to meet special conditions, but the one herewith serves for ordinary transactions.

OFFICE OF

JOHN DOW & Co.,
Brookville, Pa.

Voucher No.

Date.....

Pay to the order of.....\$.
..... Dollars,
in full payment of.....

TO FIRST NATIONAL BANK,
Brookville, Pa.

N. B.—The proper indorsement of this voucher is a sufficient receipt, no other required.

Form (Reduced) of Combination Check and Voucher.

GEO. H. CLARKSON has bought the Hardware, Stove and Sporting Goods business of J. F. Hortenstein, Laredo, Mo., and will continue at the old stand.

MEARS & CALHOUN have succeeded Mears & Bowlin, Cashion, O. T., dealers in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Buggies and Wagons. The new firm are enlarging the store, and when the improvements under way are completed its dimensions will be 40 x 80 feet.

THE NATIONAL HARDWARE ASSOCIATION.

The seventh annual convention of the National Hardware Association opened on Wednesday at the Hotel Hollenden, Cleveland, Ohio, with a good attendance of delegates and a larger representation of manufacturers than at any former jobbers' convention.

The convention was called to order by the president, Richard W. Shapleigh, J. H. Van Newkirk of the Russell & Erwin Mfg. Company was elected secretary of the convention. President Shapleigh delivered an especially interesting and able address, covering the work of the association in the past year, the benefits derived therefrom and the outlook for trade in the future.

Secretary-Treasurer T. James Fernley, in his annual report, said that fewer complaints against manufacturers had been received during the past year than ever before, and that a gratifying increase had taken place in the membership of the association.

THE ECONOMICAL DISTRIBUTION OF GOODS.

An interesting collocation in regard to the most economical distribution of goods was then held. The speakers agreed that this can be best done through the jobbing trade, but a number of points were brought out relating to matters in which the jobbers were regarded as not serving the manufacturers' interest, such as their unwillingness to introduce new goods, using special brands in many lines, instead of manufacturers' brands, and failure in many cases to maintain manufacturers' prices to the retailers. Addresses on this subject were made by William Bates, sales manager of the Kirk-Latty Mfg. Company; William Powell, treasurer of the Columbian Hardware Company; G. E. Needham of the Garry Iron & Steel Company and others. Mr. Needham's address, which touched more particularly upon conditions connected with sheet metal goods, was as follows:

The subject you have assigned to me for discussion is "How Can Manufacturers of Hardware and Kindred Lines Most Economically Distribute Their Products?" In considering this question and giving my views, it seems to me that some light may be obtained by relating my experiences along these lines for over 30 years, and they may be of some interest, if not amusement, to the members of this convention.

It is said that "Experience is a good schoolmaster." I think in my case this saying has been verified. My experience was not along the lines of hardware, but kindred lines—viz.: Iron and steel roofing, sidings, ceilings, conductor pipe, eaves trough, &c. Our company, the Garry Iron & Steel Roofing Company, were among the first to commence this business, and may be considered the pioneer manufacturers of the above named material, therefore it became my business to market our products. The question came to my mind, "What will be the best and most economical way to dispose of them?" Metal sheets were well known, but not for roofing purposes; it therefore became necessary to educate the public to their practical use for purposes designed, and who should be the schoolmaster? Knowing the ability of jobbers for this work, I sought to make arrangements with them for this purpose. They kindly and gently informed me that a demand for them must first be created before they would or could do anything with them. These were the old school jobbers, doing business on the slow motive power, hence the demand had to be created, which was done through other sources; the consumer, the tinner and the retailer. The demand did come and came in enormous proportions, as evidenced by the thousands of tons of sheet metal that are used for these products yearly at the present time. The demands have been made, conditions for handling manufactured product are changed, business is being done on the high pressure and rapid transit principle. Now the question arises, "What is the cheapest, quickest and most practical way of marketing our goods?" The demand has been created—now the demand is, "What is the best and most feasible way of taking care of this demand?"

In looking the field over I am satisfied that this problem can be solved through the agency of the jobber. When we take into consideration their ways and means and their willingness, providing we give them the money end of the business, to handle our products, we, as manufacturers, are forced to admit that the proper solution of the question is in favor of the jobber.

With their great army of traveling salesmen, composed of men of brains, business ability, tact and energy, going into every city, town and hamlet, daily and al-

most hourly, the jobber has pre-eminently the advantage over any other system that at this time presents itself to my mind for selling and distributing goods.

I think I am within the bounds of truth when I say that your association is the largest and most influential, representing the largest amount of capital, of any commercial organization in the country. I am in favor of association of this character, for it enlarges men's views by interchange of thoughts and ideas, destroys petty jealousies and lifts men on a higher plane of business principles, establishing harmony among the members and securing the confidence of your customers and the good will of the public.

In conclusion I wish to say that a closer and more harmonious business relationship should exist between the manufacturer and the jobber. Their relations should be placed on the base of live and let live, in perfect harmony and justice, on the universal brotherhood of man, and founded on the eternal principle of "Doing unto others as you would have others do unto you."

SESSION OF METAL DEALERS.

After the morning session the members of the association dealing in tin plate and metals met for a brief conference.

OUTLOOK FOR THE FUTURE.

An interesting address was made before the association by Frank Dickerson, general sales agent of the American Tin Plate Company, New York, on "The Outlook for the Approaching Year; Will the Present Range of Prices Probably Prevail?" Among other things, Mr. Dickerson said:

This year of grace that is now drawing to a close is the third year of good business and large profits; but who shall say that there are to be four more? There may be, and I hope there will be. Others will say that the panic years of the past century were 1817, 1837, 1857, 1873 and 1893—intervals of 20 years in every case except one, when the interval was 16 years. Those who would argue from these statistics will tell you that we need not look for a severe shrinkage in values until 1909 at the earliest, and possibly not until 1913. Such optimism may be correct, and I hope that it may be, although I shall be satisfied if the great prosperity of the past three years shall reach the magic number of seven.

INFLUENCE OF COMPETITION.

The commercial sky is clear to-day and business is good. The clouds are so few as to be scarcely in sight. There is prospect of competition in some lines, and competition affects prices very quickly. Often the prospect of a lively competitor coming into the market will reduce prices materially before the goods are on the market. Very large and heavy competition will reduce prices until there is no profit to the manufacturer, and in an experience of 20 years as a merchant I have found that the merchant's profits were best when the manufacturer's profits were best; when the manufacturer made little or nothing, the merchant's profits were also little or nothing. Gentlemen, I do not say this because I represent a manufacturing company, but because in my experience this is true. Probably every one present can testify that there is more money in selling some one article than in selling some others, and if you investigate I think you will find that the profitable article is invariably one that pays the manufacturer handsomely. The article which pays but little profit to the merchant is sold by the manufacturer usually very near the cost. If there be in this, my experience, a hint not to be too ready to encourage competition, I trust that those who hear will profit thereby.

FUTURE PROSPECTS.

I do not wish to weary you with statistics and details, but in a general way to refer to the fact that the conditions of trade and commerce are much the same now as they were a year ago. True, the harvest this year may fall short of that of 1900, but when all is gathered and the aggregate summed up, I believe that the difference will be so slight as not to interfere with the prospects of good business for many months to come. Railroad earnings are fully up to 1900, and in nearly all lines of business the outlook is good, so that in the words of the hymn we may say, "Every prospect pleases, and only man is vile." When earnings are large and money is plentiful people spend freely and prices have an advancing tendency, and this is one reason why the optimist now looks for higher prices during the coming year. We are all willing to acknowledge the truth of this, but as high prices tend to diminish consumption, it has ever been the policy of the best managed of the larger manufacturing companies to be most conservative in advancing prices. The next six months will undoubtedly see some goods at higher prices than those now ruling, and it is not impossible that other

goods are too high to-day, and that lower prices will prevail; but in the main it seems to me as most probable that the present level of values will continue for some little time to come.

Asbestos Sad Iron.

The Dover Mfg. Company, Canal Dover, Ohio, are offering the sad iron shown in the accompanying cuts. It is made in two parts—the core or iron proper, and its hood, or cover, with the necessary handle. The core is described as a solid block of the best obtainable iron, retaining the heat and providing the weight necessary

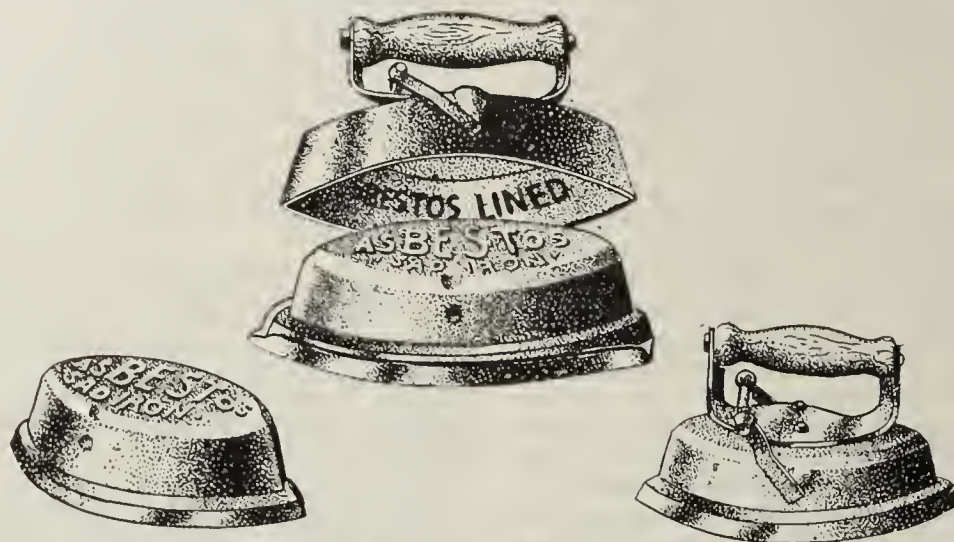


Fig. 1.—Asbestos Sad Iron.

to secure a high polish on the work with the least possible muscular effort. The core is referred to as being heavily nickel plated, and its face as being ground absolutely true, and finely polished. The hood is a neatly fitting nickel plated cap, which slips over the core, its lower edge resting upon the projecting flange of the core, to which it is instantly and rigidly secured by a locking device. This is alluded to as being made of a high grade spring steel, simple in construction, positive in action, and so firmly securing the hood to the core that it can only be detached by the operator. The entire surface on the inside of the hood is lined with asbestos, to serve the double purpose of preventing the walls of the hood becoming unduly heated, and at the same time to retain the heat in the core by completely screening it, when in use, from air currents. It is remarked that the dead air space between the upper surface of the core and hood materially supplements the

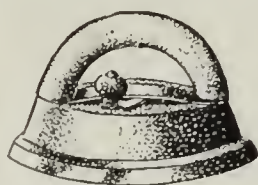


Fig. 2.—Baby Sad Iron.

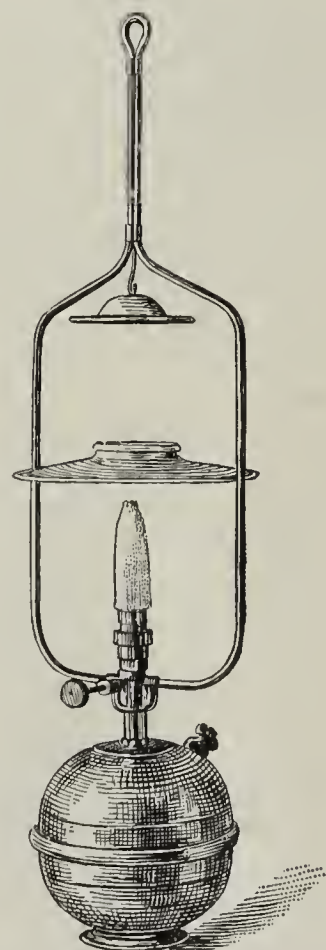
nonconducting asbestos lining. As the hood is never upon the core, except when the iron is being used, it is pointed out that it cannot become heated, and is readily kept clean and bright at all times. The handle is attached to a broad shield of sheet metal. The shield, while firmly secured to the hood, is so arranged that a wide air space intervenes between the upper surface of the hood and the under side of the shield. This construction, in connection with the asbestos lining, is to eliminate any possibility of the handle becoming more than slightly warm. In designing the handle especial care was taken to secure one that should neatly fit a lady's hand. The covers, shields and springs are referred to as being copper plated before nickeling to secure what is known as never rust plate. The manufacturers guarantee the irons to be perfect throughout, and replace broken or defective parts free of charge. A set of laundry irons consists of one handle and asbestos lined cover combined, three interchangeable cores or bottoms, and one asbestos covered stand, the complete set weighing 16 pounds. A set of tourist irons consists

of one handle and cover combined, one core or bottom and a stand. A set of the baby iron, Fig. 2, includes the same number of pieces, and weighs about 1¼ pounds.

The Turner Little Wonder Light.

The Turner Brass Works, 122 East Kinzie street, Chicago, have embarked in the manufacture of vapor lamps on an extensive scale and have just brought out the Turner Little Wonder light, which is herewith illustrated. It is of the under generator type and represents, it is claimed, the most advanced ideas which have so far been produced in vapor lamps. The lamp in ap-

pearance may seem to differ but little from other recently invented lighting appliances, but important changes have been made in its mechanism. The globe font or base is a nickel plated bowl made of 18 gauge copper, which is lined with block tin to effectively pre-



The Turner Little Wonder Light.

vent the gasoline corroding the copper, and is guaranteed to stand a pressure of 110 pounds. Through a small brass tube inserted in the bowl, the gasoline is forced up to the burner by air pressure. The lower end of this tube rests upon the inner base of the bowl, while the upper end terminates in the generator. Surrounding the generator is a small asbestos lined cup, into which a teaspoonful of wood alcohol is poured, and a

match is applied to generate the heat in starting the light. A double filling plug, termed a filler and air plug, located on the side of the bowl, is the means by which the lamp is replenished. This plug is entirely removed from the aperture in pouring the gasoline into the bowl, and when it is again fastened in place a small thumb screw piercing its center is slightly loosened, a rubber tube is connected to it, and the air is pumped in to whatever force is desired. This lamp is claimed to be the only gasoline lamp using an automatic cleaning valve. A small steel needle is so arranged that at each half turn of the cut off valve the needle passes into the orifice of the burner, and at the next half turn it is withdrawn. The motion is the same, turning either right or left, after having opened the valve a few turns. It thus moves automatically in its process, removing the carbon at the base of the burner and thus preventing the latter clogging. It does not come in contact with the extinguishing rod and cannot in any way turn the light out. This improvement favorably impressed the inspectors of the Iowa State Insurance Board. The lamp is adapted for use in any interior lighting, especially in large establishments, public resorts, stores, &c., but can be used as effectively in the open air as within doors. It gives a 500-candle-power light.

Stove and Hardware Dealers.

THE RIPLEY HARDWARE COMPANY, Grafton, Ill., are calling attention to the Rippley Whitewashing and Painting Machine, which they are placing upon the market. The company point out that there is nothing that will light up a barn, mill, warehouse or factory like a good coat of clean white paint, or, better still, white-wash. The great difficulty is the expense, and this is the problem that they claim to have solved with their Compressed Air Sprayer. The original and important feature that makes this Sprayer especially efficient is the air compressor, which in one minute's pumping creates sufficient pressure to discharge the entire contents in a fine mist or continued stream, as desired, thus greatly accelerating the painting of inside walls and ceilings, as well as materially cheapening the cost of the operation. The Rippley Whitewashing and Painting Machine is furnished in two sizes, of 8 gallons and 16 gallons, and is substantially made of galvanized iron. The machine is equally good for outside work and handles all kinds of materials effectively. The company will be glad to furnish catalogues and descriptive matter upon application.

THE NATIONAL ENAMELING & STAMPING COMPANY, New York, are calling the attention of the trade to a select line of Coal Vases illustrated in their Catalogue No. 1, on pages 568, 569 and 570. In addition to the line illustrated in their catalogue, the company make some special decorations in the blended effect which have proved great favorites with the trade, and these beautifully decorated Coal Vases are in large demand. As this is the season of the year when these goods are purchased, the company invite dealers who have not already laid in a stock to write for prices and information regarding these goods. Catalogues of their complete line will be furnished on application.

THE WAY HARDWARE CORPORATION have succeeded the Way Hardware Company at Hartford, Conn. The company's capital stock is \$20,000, and the incorporators are Isaac Bragaw, S. L. Way and Charles L. Way.

O. H. HOLLAND, Sandwich, Mass., advises us that he has disposed of his Stove and Tin business to George S. Wing, who will carry it on at the old stand.

SHEPHERD HARDWARE COMPANY have purchased the business of E. A. Wisdom, which he has conducted for the past six years at Shepherd, Mich. The members of the new firm are C. F. Johnson, formerly with Mr. Wisdom, who will manage the business, and D. G. Willis, traveling representative in Michigan of the Bostwick-Braun Company, Toledo, Ohio. Mr. Willis also holds a half interest in the Lyons Hardware Company, Lyons, Ohio. The new firm took possession on the 1st inst., and

will be pleased to receive catalogues and other printed matter relating to Hardware, Stoves, Paints and Oils, Sporting Goods, Lime, Cement, &c.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, have contracted for the erection of the new Hardware warehouse which was mentioned some months since as in contemplation. The site of this warehouse fronts on North Water street, while the rear abuts on the Chicago River. The warehouse will have both rail and navigation facilities. Railroad tracks now run along North Water street, and a spur will be extended into the building which will enable eight to ten cars to be run in under cover. The dimensions of the building are 120 x 400 feet, and it will consist of four stories and a basement. The walls will be constructed of brick and stone, the interior being of heavy mill construction. It is expected that it will be completed by January 1. The company's large store building at Lake street and Wabash avenue will continue to be occupied, as all the space will be needed for their constantly growing business.

THE partnership heretofore existing under the style of J. F. Barber & Co., wholesale dealers in Hardware, Tools, Cutlery, &c., and manufacturers of Tinware, Philipsburg, Pa., was dissolved on the 1st inst. by mutual consent. On the same day a new partnership was formed under the name of J. H. Turnbach Hardware Company, who will continue the business at the old stand.

W. B. COX has bought the Shelf Hardware and Stove and Tinware business of John H. Robson, Ovid, Mich., and is continuing at the old stand.

W. E. WATKINS & BRO. have succeeded W. E. Watkins in the wholesale and retail business in Hardware, Stoves, Tinware, Farm Implements, Sporting Goods, Harness, Wagons, Buggies, Sash, Door, Queensware, &c., Mena, Ark. The stock comprises about \$5500 worth of goods.

W. A. MCCALL & SON have lately engaged in business in Hobart, O. T., handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c. The firm also have a house in Nocona, Texas.

GETTS & GETZ BROS. have succeeded E. M. Getts in the Hardware, Stove, Farm Implements, Sporting Goods and Wagon and Buggy business in Delta, Col.

WM. F. ANDREWS has purchased the Hardware, Stove and Farm Implement business of Armstrong & Rider, Union, Iowa. Mr. Andrews intends to increase the stock thus acquired.

J. K. STAPLES & SON have disposed of their Shelf Hardware, Stove and furniture business in Nelson, Mo., to D. H. Louderback, who expects to double the stock thus purchased.

TARRANT & MCGOWAN, dealers in Hardware, Stoves and Miners' Supplies, Reeds, Mo., have sold out to C. B. Hood, who will continue at the old stand. Messrs. Tarrant and McGowan desire to devote more attention to their Zinc mines in that locality.

BEARDSLEY & SON, Norman, O. T., have been succeeded by Beardsley Hardware Company, who have enlarged the storeroom and added Wagons and Buggies to their former line of Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements.

EMMERT & PRICE have purchased the Hardware, Tinware and Farm Implement business formerly conducted by J. H. Kelsey & Son, Benton, Iowa.

KERR & HURSH are successors to H. M. Durrett, Wichita Falls, Texas, dealer in Shelf and Heavy Hardware and Stoves and manufacturer of Saddlery.

THE GLOBE COMPANY, 1321 Walnut street, Philadelphia, contemplate adding to their business a line of Coal, Gas, Gasoline and Oil Cook and Heating Stoves, and solicit from manufacturers catalogues and price lists, together with trade and spot cash discounts.

THE SEITER & CHERRY COMPANY, Keokuk, Iowa, dealers in Furnaces, Ranges, Tinware, &c., report a large increase in their shop trade, while the demand of customers in the store is good.

Behrer & Co.'s Bathroom Fixture Catalogue.

The first of three catalogues to be issued by Behrer & Co., 81 Beekman street, New York, has made its appearance. It is devoted to porcelain lined baths, porcelain baths, showers and bathroom furnishings. The catalogue, consisting of 46 pages, 9½ x 12 inches in size, bound in a drab cover having a design in a two-colored effect, is excellently printed and illustrated. The house presents this to show one of their lines of sanitary specialties and plumbers' supplies. It shows a line of fixtures adapted for equipping the bathroom in modern residences, apartment houses and hotels. The bathtubs are guaranteed, and the statement is made that the bathroom fittings are of heavy pattern and heavily nickel plated. The first 22 pages are devoted to a variety of French and Roman pattern enameled iron bathtubs, with wide and narrow rolled rims of different heights, supplied with a variety of styles of nickel plated supply and waste fittings. Accompanying the illustrations are list prices and detailed information in reference to the goods. Enameled iron receptors for use in connection with shower baths are also displayed, together with the simple shower bath and the combination needle and tubular shower bath, both with curtain. Porcelain lined sitz baths and foot baths are also shown.

Several pages are occupied by solid porcelain bathtubs, of French and Roman pattern, shown with different styles of supply and waste fixtures. The illustrations indicate the styles of decoration that can be furnished when ordered. One page presents a picture of a solid porcelain bathtub, designed for setting in the corner of a room. These tubs can be furnished either right or left handed. Porcelain foot and sitz baths are also shown. Eight pages are devoted to shower baths and shower bath fittings, the variety ranging from the combination needle and shower baths to the nickel plated ring shower and shampoo. The remaining pages of the catalogue contain a variety of soap cups, sponge holders, towel baskets, brush holders, tooth brush racks and holders, tumbler holders, towel racks, looking glasses, cigar rests, match scratchers, and a variety of toilet paper racks and holders. The goods shown in the catalogue are tastefully designed and well adapted to the needs of firms who cater for fine trade. The catalogue is to be followed by two others, one devoted to lavatories and their trimmings, and the other to kitchen sinks and laundry trays.

Kewanee Boiler Catalogue.

The heating contractor who does large as well as small work will find much in the catalogue of the Kewanee Boiler Company, Kewanee, Ill., adapted for his use. The company manufacture steel and cast iron boilers of all kinds for power, steam and water heating, steel tanks for all purposes, boiler stacks, boiler fronts and trimmings, and also handle a complete line of steam and water supplies. A bird's-eye view of their factory at Kewanee, Ill., is accompanied by the statement that it has been completed since the issue of their last catalogue, and is equipped with the best boiler making machinery and all the appliances for handling work expeditiously. The company have nearly doubled their producing capacity, while securing much more room for stock and better shipping facilities. The statement is made that in addition to this catalogue the house issue a catalogue especially adapted for boilers for power use only. A page is devoted to boiler ratings, followed by suggestions as to brick set and portable boilers, chimneys and flues, hard and soft coal, and the care of boilers when burning soft coal.

The first boiler shown is the Haxtun, which is made of steel plate, for both portable and brick setting, for steam and hot water heating, and in a variety of sizes. It is followed by the Defender, a steel plate boiler, which is also made in several sizes for both portable and brick setting. Vertical sectional cuts are used to show the construction of the Defender drop tube boilers. The Great Northern, steel plate, boiler is made for burning

hard and soft coal and wood. It is of the return flue, internal fired type. Six pages are devoted to the Kewanee standard Fire Box Boilers of the horizontal return flue type, steel plate construction. The Kewanee east iron boiler is of the round form, horizontal, sectional type, designed for both hard and soft coal, to present a large fire surface, and for a rapid internal circulation, for maintaining a steady water line. The Superior is a vertical, sectional cast iron boiler of the auxiliary crown sheet type, with an indirect draft. The Tabasco is a small heater designed for heating small buildings, made both as surface burner and magazine feed. It is especially adapted for supplying hot water for hotels, laundries, residences, baptisteries, and wherever a large supply of hot water is needed.

The company also manufacture a variety of sizes of storage tanks for use in connection with heaters for supplying buildings of large size with hot water. They are arranged either for being heated by tank heaters, or by steam in pipe coils inserted inside. These tanks are made in sizes from 66 gallons to 1000 gallons. The last half of the catalogue is devoted to the Standard horizontal tubular boilers. Tables give prices and dimensions, and engravings show the front equipment and steam drums, smoke connections, and grate arrangement, while sectional views give the dimensions for setting them. Another section is devoted to vertical tubular power boilers, feed water heaters and tanks tested to stand high pressures for automatic pneumatic water supply and other purposes. Boiler feed pumps and pumps and receivers, gravel basins, blow-off tanks, and staggered tube radiators, followed by a price-list of lap welded boiler tubes, complete the publication.

The P. & S. S. League.

Interest in the bowling tournament of the Plumbing and Steam Supply League brings a good representation of the trade to the Monarch Alleys, Twenty-sixth street and Sixth avenue, New York, each Monday and Thursday night. Last Monday evening the teams of Ronalds & Johnson Company, New York; Ronalds & Johnson Company, Brooklyn, and Dimock & Fink Company each won and lost a game. On Thursday night the team of E. F. Keating lost two games and joined the Central Foundry Company's team at the foot of the list, while the John Simmons Company team won two games and joined Behrer & Co. at the top. The H. P. Read Lead Works won and lost a game. G. J. Ryder of the Brooklyn team of the Ronalds & Johnson Company has top score with 186 and the John Simmons Company team hold the high team score with 699. Next Monday night, when Secretary Wilson heads the aggregation of salesmen, assisted by James Conran, and President Haff brings the F. N. Du Bois Company team to the front, lively work will be cut out for the Crane Company team.

The National Association of Master Plumbers of Australasia.

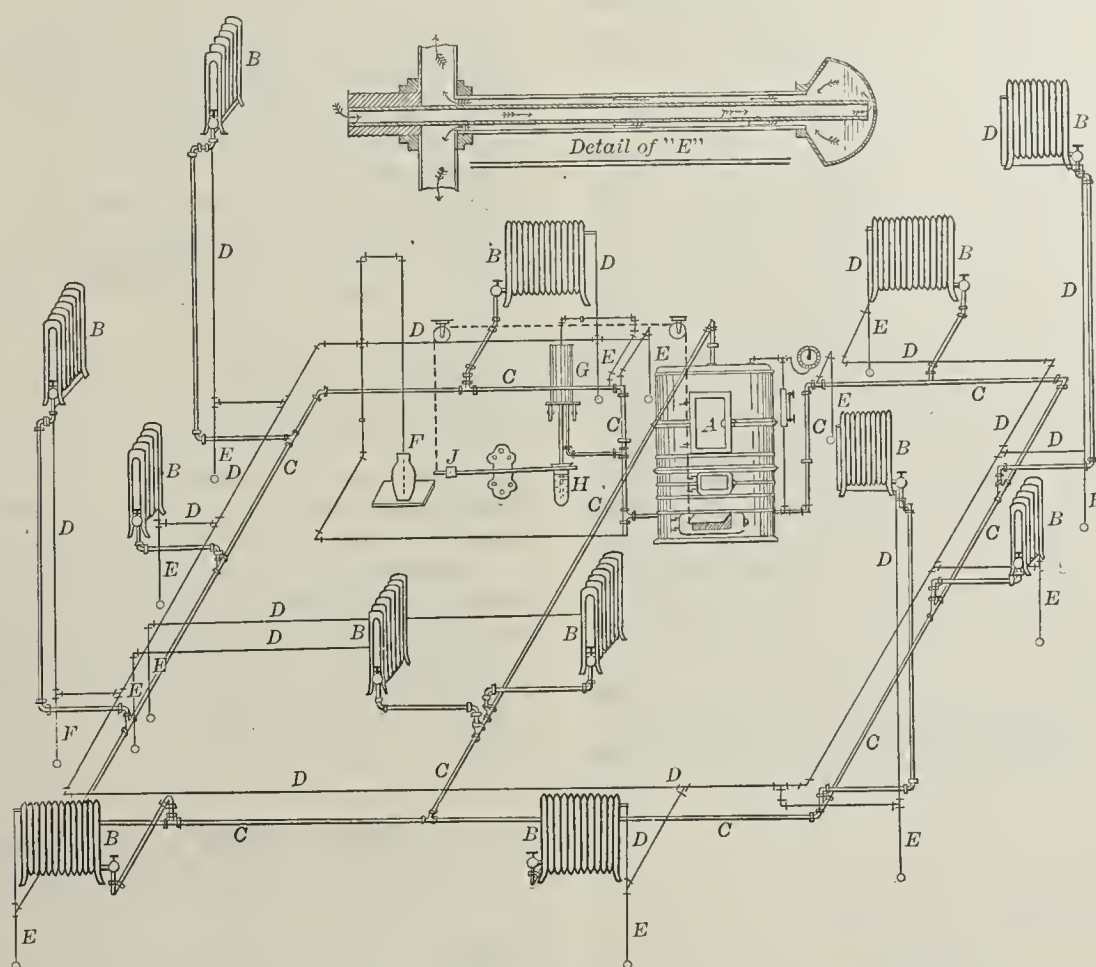
The annual convention of the National Association of Master Plumbers of Australasia was held at Sydney, New South Wales, from July 29 to August 2. The meeting was presided over by President J. Minto. Representatives were present from New South Wales, Queensland, South Australia and Victoria. After a speech of welcome by the Mayor the convention took up its work, adopting resolutions for the better protection of the plumbers in buying plumbing material; for the reservation of plumbing from general bids; for examination of plans and specifications by experts under the public health act, and for the protection of subcontractors' interests in the collection of their bills. Sanitary, legislative, apprentice and essay committees were appointed. The delegates were entertained at a banquet, a trip to the sewage farm, another around the harbor, and an outing at Correy's Gardens. At the close of the convention it was decided to hold the next meeting at Adelaide during Easter, 1902.

THE MORGAN VACUUM STEAM HEATING SYSTEM.

Vacuum steam heating—namely, heating by steam below atmospheric pressure—is making rapid strides into popular favor. Briefly stated, it possesses the meritorious qualities of the steam and hot water heating plant, while it eliminates some of their objectionable features. The isometrical plan herewith given, which illustrates the vacuum system developed by Morgan & Co., 40 Dearborn street, Chicago, shows an entirely new departure, said to be thoroughly practicable for use in any kind of a building, requiring no pumps, ejectors or apparatus using power to produce a vacuum. This system is entirely self contained, the dampers being governed by the temperature of the vapor generated within the system itself, and may be arranged at will to run above or be-

D is connected to the return pipe so that the water of condensation will return to the boiler, the loop extending up being for the purpose of keeping water from column F. Tank G incloses a coil which is connected at the top to the main return pipe above the water level in generator A and at the bottom with the return below the water level. The air in tank G, being expanded by heat, forces the water from itself into receptacle H, the weight of which, overbalancing the weight at the other end of the rod, causes the dampers to close. As tank G cools off the atmospheric pressure forces the water from the receptacle back into the tank, which, lightening the receptacle, causes a reverse action and the dampers are opened.

The advantages claimed for the system are, first, the even temperatures of the heating apparatus, great rapidity of circulation and an economy of from 25 to 40 per



Isometrical plan of complete steam plant for steam heating below atmospheric pressure and without the use of air valves. A—Generator. B—Radiators. C—Steam pipes. D—Air pipes. E—Mercury traps. F—Vacuum column. G—Tank for damper regulator. H—Receptacle for liquid from tank G. J—Lever controlling dampers.

The Morgan Vacuum Steam Heating System.

low atmospheric pressure. There are no air valves to be tampered with, such air as may be expelled being delivered in the basement, remote from the living rooms. It is an apparatus that cannot be tampered with, and, once arranged, will run indefinitely, it is claimed, without further attention, other than that required to keep up the fire in the boiler and to remove the ashes.

It differs from the ordinary steam plant only by having the air exhaust from each radiator extended through tubing into the basement, where it is connected to the mercury traps E, which in turn are connected to the main air pipe line D, which terminates at vacuum column F. The air from the entire system is exhausted through the air pipes D, the mercury traps E having just sufficient mercury to seal the inner tube against pressure equal to that of the atmosphere (14.7 pounds), the equivalent of a column of mercury 30 inches high. Owing to the small bore of the tube and the large area of the bulb at the end of the pipe E, the air passes through the mercury in its course to pipe D without any appreciable pressure.

The mercury in the bottle at the base of the mercury column F may be varied at will to increase or decrease the pressure of the entire system. At column F, air pipe

cent. greater than either hot water or low pressure steam plant. The cost of installation, it is pointed out, is slightly more than steam and considerably less than hot water.

\$100 for a Think!

The Monash-Younger Company, 201-207 South Canal street, Chicago, Ill., are sending out a card which should prove attractive to the bright young men in the heating trade. In addition to a picture of their Perfected Duplex Locked Shield Air Valve, it also bears the statement: "\$100 for a Think!" The company say that they want an original idea to advertise this air valve—"something new—something good—something best." They offer \$50 for the best idea, \$30 for the second best, and \$20 for the third best. The contest closes January 1. The contestants may submit poetry or prose, sketch or design. These prizes will make fine New Year's gifts to the fortunate competitors. The card which the concern send out should prove a very good advertisement, as it contains some valuable information in reference to the valve which they wish to more thoroughly advertise.

The Standardization of Extra Heavy Flanges.

Steam pressures varying from 100 to 250 pounds pressure entered into engineering practice about the year 1889. For pressures less than 100 pounds there had long existed confusion regarding standards for flanges of pipe, fittings and valves. A schedule of standard flanges was adopted July 18, 1894, by a committee of the Master Steam and Hot Water Fitters' Association, a committee of the American Society of Mechanical Engineers, and the representatives of the leading valve and fitting manufacturers of the United States. As the use of high steam pressures became more general there came into existence so many different diameters, thicknesses, drilling circles and number of bolts for flanges on fittings, valves and pipe for extra heavy pressures that manufacturers could not safely keep stocks of goods, and mill architects and engineers were greatly delayed at times in making up specifications for contemplated work on account of time taken to find out what the different manufacturers could or would furnish.

Recognizing the need of a standard for extra heavy, J. C. Meloon, mechanical superintendent of the General Fire Extingulsher Company, Providence, R. I., issued an invitation to the leading valve and fitting concerns of the country to meet and consider this subject. In response to this invitation several of the largest concerns sent representatives to a meeting at New York City April 24, 1901. At that meeting a committee was chosen to formulate a standard. This committee consisted of J. C. Meloon, mechanical superintendent, General Fire Extingulsher Company, Providence, R. I.; J. F. O'Brien, secretary, the Pratt & Cady Company, Hartford, Conn.; L. R. Greene, engineer, Walworth Mfg. Company, Boston, Mass.; H. D. Gordon, M.E., Jenkins Bros., New York, N. Y.; F. A. Strong, superintendent, Eaton, Cole & Burnham Company, Bridgeport, Conn.; F. A. Connet, engineer, Builders Iron Foundry, Providence, R. I. Mr. Meloon was made chairman and Mr. O'Brien secretary.

The committee had various sessions, and submitted to the manufacturers interested the following recommendations and schedule for standard at a meeting held in New York City, June 28, 1901:

I.
Multiples of four for drilling.

II.
Drilling should straddle vertical axis.

III.
Bolt centers not to exceed 3 3/8 inches, except on 2 1/2-inch size. Committee at first proposed eight 5/8-inch bolts, but sample elbows and flanges were drilled and bolted together, and it was found that eight 5/8-inch bolts interfered with inserting bolts.

IV.
Distance from center of bolt to edge of the flange should always equal or exceed the diameter of bolt plus 1/8 inch for 9-inch valves and under, and diameter of bolt plus not less than 1/4 inch for sizes larger.

V.

Size of pipe. Inches.	Diameter of flange. Inches.	Thickness of flange. Inches.	Diameter of bolt circle. Inches.	Number of bolts.	Size of bolts. Inches.
2	6 1/2	7/8	5	4	5/8
2 1/2	7 1/2	1	5 7/8	4	3/4
3	8 1/4	1 1/8	6 3/4	8	5/8
3 1/2	9	1 3/16	7 1/4	8	3/4
4	10	1 1/4	7 7/8	8	3/4
4 1/2	10 1/2	1 5/16	8 1/2	8	3/4
5	11	1 3/8	9 1/4	8	3/4
6	12 1/2	1 7/16	10 3/8	12	3/4
7	14	1 1/2	11 7/8	12	7/8
8	15	1 5/8	13	12	7/8
9	16	1 3/4	14	12	7/8
10	17 1/2	1 7/8	15 1/4	16	7/8
12	20	2	17 3/4	16	7/8
14	22 1/2	2 1/8	20	20	7/8
15	23 1/2	2 3/16	21	20	1
16	25	2 1/4	22 1/2	20	1
18	27	2 3/8	24 1/2	24	1
20	29 1/2	2 1/2	26 3/4	24	1 1/8
22	31 1/2	2 5/8	28 3/4	28	1 1/8
24	34	2 3/4	31 1/4	28	1 1/8

VI.

The bolt circle diameters, as above stated, will allow the use of calking recess on pipe flanges, provided such device is specified.

The schedule presented was unanimously adopted by the manufacturers present, and January 1, 1902, was the date set for its adoption.

The following firms have agreed to adopt the standard and put it into effect January 1, 1902:

- The Eaton, Cole & Burnham Company, Bridgeport, Conn.
- Chapman Valve Mfg. Company, Indian Orchard, Mass.
- Walworth Mfg. Company, Boston, Mass.
- Crane Company, Chicago, Ill.
- The Pratt & Cady Company, Hartford, Conn.
- Jenkins Bros., New York City.
- General Fire Extingulsher Company, Providence, R. I.
- Builders Iron Foundry, Providence, R. I.
- Jarecki Mfg. Company, Erie, Pa.
- Crosby Steam Gage & Valve Company, Boston, Mass.
- The Kennedy Valve Mfg. Company, New York City.
- The Ludlow Valve Mfg. Company, Troy, N. Y.
- The Lunkenheimer Company, Cincinnati, Ohio.
- The Michigan Brass & Iron Works, Detroit, Mich.
- The Kelly & Jones Company, New York City.
- Eastford Wire Mfg. Company, Belleville, N. J.
- National Tube Company, Pittsburgh, Pa.
- Coflin Valve Company, Boston, Mass.
- Rensselaer Mfg. Company, Troy, N. Y.
- The Mason Regulator Company, Boston, Mass.
- McNab & Harlin Mfg. Company, New York City.
- The John Davis Company, Chicago, Ill.
- Watson & McDaniel Company, Philadelphia, Pa.
- Ross Valve Company, Troy, N. Y.
- Edward P. Bates, Syracuse, N. Y.

The following firms will furnish to standard if desired by their customers:

- Best Mfg. Company, Pittsburgh, Pa.
- Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, Pa.
- Eddy Valve Company, Waterford, N. Y.

The committee's labors were very much lightened by the hearty co-operation of all the firms with whom they held communication, and the list of firms mentioned, embracing the largest manufacturers of valves and fittings in the East and West, shows the interest taken in the subject. A limited number of the schedules will be printed by the committee and copies may be obtained of the secretary, J. F. O'Brien, P. O. Drawer No. 66, Station A, Hartford, Conn.

The Charles Millar & Son Company.

In a recent issue of the *Observer* of Utica, N. Y., considerable space is devoted to the Charles Millar & Son Company, wholesale dealers in plumbers', steam fitters' and tinner's supplies, at 127-29 Genesee street in that city. This house, in addition to manufacturing many goods, carry what is said to be the largest and most complete stock of plumbers' supplies to be found anywhere in the State outside of New York City. Their trade covers a broad field, including New York State, Northern Pennsylvania, Vermont, Western New Hampshire, Western Massachusetts and Western Connecticut. Recently they have set apart a 20 x 60 foot space in the southern section of their establishment as a showroom for the practical exhibition of their plumbing goods, more particularly bathroom fittings and appurtenances. In this showroom a plumber or his customer may see the handsomest and most modern bathroom equipments and observe their operation. The display includes a solid porcelain bathtub and handsome enameled iron bathtubs, with their different styles of nickel plated supply and waste fixtures. Lavatories of equally elaborate finish and handsome design, with various styles of fixtures, may also be seen. Water closets of the most approved pattern and finished in keeping with the bathtubs are displayed in great variety. In addition such special fixtures for the bathroom are shown as towel racks, sponge holders, soap cups, tumbler, tooth and hair brush holders, finger ring racks and French plate glass mirrors in a variety suitable for equipping a luxurious bathroom. Sinks and wash trays for equipping the laundry, kitchen and pantry, of cast iron, enameled iron and solid porcelain, with copper range boilers, are also shown with their suitable fixtures, leaving little to be desired in selecting the plumbing goods for a residence. In addition

to these goods, the house carry a variety of substantial goods of modern construction of less pretention in appearance and finish, but equally well qualified to maintain in a sanitary condition the building in which they are used.

THE PRESENT STATE OF THE SCIENCE OF HEATING AND VENTILATION.*

BY PROF. H. RIETCHEL.

Secret adviser to the Government, and Professor in the Royal Technical High School of Berlin.

Translated from the German by Charles F. Hauss.

When men meet to advance their profession by a mutual exchange of experiences and views, it is well in the first place to show a picture of the present development of the science, to demonstrate what has been done in the premises and to present the problems yet to be solved.

As in all technical branches, the one we have entered has had no check. We have not only worked energetically, but with result. Hence the field of ventilating and heating science has been greatly increased. The growing demands of the time, the increase of population in cities, the endeavors in the field of sanitation and for the general good, the growing knowledge of the meaning as well as the problems and objects of hygiene, have constantly set for us greater problems, urged us to more restless endeavor, and made us the advancers of our profession.

Whereas in the past only large public buildings were provided with central heating and ventilating apparatus, and the erection of this class of apparatus in private residences was looked upon more as a luxury, to-day central heating and ventilation enter into competition with local heating and ventilating for the better class of residences, flats, and, in fact, for all buildings in which a large number of people are assembled.

The successes of science and the demands we make of life are constantly changing; the needs increase with the forces at our command. Whereas, for instance, our parents pursued their studies with a candle or oil lamp, followed in turn, during our youth, by the kerosene lamp and gas, we find that to-day nothing short of electric light or a mantle gas light (Welsbach) will serve us as a source of light. In the youth of our parents the mail coach served the purpose for traveling, while to-day an express train, averaging 50 miles an hour, seems so slow to us that we are seeking means to double even this speedy mode of travel.

So also in our branch have the demands and knowledge increased. Even 20 years ago there was no really scientific knowledge of the subject of heating and ventilation other than in exceptional cases, but generally guess work or rule of thumb was the order of the day. It was more or less a matter of luck, when one of the larger systems erected was satisfactory.

The branch itself was not held in high esteem, being run as a trade, and naturally treated as such. Those in the branch were, for the most part, practical rather than technical men. In our high schools our branch had no place, while to-day our branch has an equal place with any other science. The engineers graduated there have taken a constantly growing interest in this branch, and, through them, the technical knowledge is spread through the practice. Formerly we received our suggestions from France and England; to-day we take our part in the development, and in some things have even taken the lead.

When Professor Böhm successfully heated and ventilated the Vienna Opera House, 40 years ago, the feat was, and rightfully so, regarded as a masterpiece. To-day we plan hundreds of similar plants, and nobody mentions them, because the results achieved are accepted as a matter of course.

Whereas the fear of failure allowed only the smaller

churches to be supplied with heating apparatus—we believing that a large church, for instance the Cathedral in Cologne, could only be heated in an unsatisfactory manner—we know to-day with a certainty that, with proper attention, satisfactory results can be obtained. The fact that in the heating of the Ulm Cathedral, with a height of ceiling of 126 feet, the difference in temperature between floor and ceiling is only $1\frac{1}{2}$ to $3\frac{1}{2}$ degrees, does not surprise us.

We use for heating a number of approved systems, of which one—that of low pressure steam heating—is to be looked upon as a modern achievement. The ingenious arrangement of this system by the firm Bechem & Post urged their competitors to a finer working out of their own systems, and helped to bring the several styles of heating to their present state of perfection, as well as the bringing in of foreign appliances, such as radiators, boilers, &c.

Heating from a central station—viz., the heating of several separate buildings from one boiler plant—has been done successfully for a number of years, though this has not been accomplished with the favorable results expected in the way of economy. The reason for these failures was not due to the system, but to the lack of knowledge and experience, the problem being in advance of the knowledge on the subject; and the use of electric lighting in connection therewith was wanting, which helped to reduce the cost of heating.

Germany has finally started in on this class of heating. In fact, we have in Dresden the largest work of the kind on the continent. There are heated by this plant, on the left bank of the river Elbe, the large Royal buildings, among them the theaters, museum, palace, court house, Catholic church, &c., that are supplied with light and heat from one central plant. The conditions, which are the worst imaginable, demand in coldest weather 60,192,000 British thermal units of heat per hour, part of which must be carried in the radius as far as 4000 feet.

Whereas in the past we used only low pressures out of consideration for life and limb, we do not hesitate to-day to use a pressure of 90 to 120 pounds. In this Dresden plant such pressures are in use, the mains running in trenches under the busy streets. Some of these trenches are under the water line of the river, which, of course, did not stop the carrying out of the work. There are two mains, each only 6 inches in diameter, at the start, with a pressure of 112 pounds at the boilers and 90 pounds at the extreme end of the main, which must be regarded as a result of correct figuring of the areas. The time required for the steam to travel to the extreme end of the system is 23 seconds, and for the return water (which is carried through a separate system) to be brought back to the central plant requires 23 minutes. There is no question as to the success of this plant, as it has been through its first winter.

The heating engineers have a right to look with pride on this work, especially owing to the many obstacles put in its way. Even in the Legislature of Saxony an engineer opposed it. The successful carrying out of the work must be credited to Minister von Watzdorf and his adviser, Mr. Temper, who was the father of the idea, and who put his whole force into the scheme to carry it to a happy conclusion.

Lately, however, there have been quite a number of these systems erected. Wherever possible, a heating system of this kind should be combined with a light and power plant to reduce as much as possible the operating expenses.

At this point heating with gas is also to be considered. Yet gas heating is not central station heating, but local heating with transport of fuel from a central point. As soon as a perfectly safe apparatus is devised for heating with gas this method of heating will offer serious competition to other methods of heating. In this connection it is well to remark that there is a big field for improvement and an opportunity for inventors and engineers in this industry.

In these days of business and industrial depression it might be well for our large electric companies to consider the feasibility of combining with the business of

* Read at the Third Meeting of the Society of German Heating and Ventilating Trades, August 12, 1901, at Mannheim, Germany.

† By central heating the European engineer means either steam, hot water or warm air furnace heating, that is, heating more than one room from a central point, as distinguished from stove or fireplace heating, which is termed "local heating."

lighting also that of heating whole parts of cities. Those companies that have the capital might work with responsible heating contractors, and I am sure that they would be well paid for their outlay.

I am happy to be able to say that, at the present time, we are able to supply almost any demand made on us, no matter what kind of building is to be heated. Yet, in the matter of ventilation, we are often asked by our authorities to do less than we can do, and less than hygiene demands, consequently leaving much to be desired. Hospitals, when being constructed, are handled with the greatest care in the matter of heating and ventilation; yet the demands of hygiene are not fulfilled.

We must admit that if we were to reduce the number of scholars in our schools to conform with the amount of space necessary, according to accepted rules of hygiene, it would be necessary to greatly increase the number of our schools. If the ventilation of school rooms, by opening the windows during recess, is necessary, and, as is officially ordered by our colleague Schmidt of Dresden, it is evident that the air is being vitiated during the occupation of the rooms, which must surely be injurious to health.

Incidentally, the ventilation of our "swimming buildings," the war ships and passenger steamers, affords a splendid opportunity, and is a matter too much ignored in the past. The steamers of our larger lines are fitted out with every comfort, even luxury; yet there is a lack of ventilation, which on steamers, because of the comparatively small space allotted to each person, is so necessary, especially on those steamers that must pass through the hot zones. The ventilation in connection with the bringing in of cool air is a matter that has received too little attention. In our navy the matter of ventilation should not be left to the constructors of the ships, to whom ventilation is an unknown science, especially as the health of the crew must be better where the hygienic demands are fulfilled.

The fact of our being more sensitive over a small difference in temperature than over a large difference in the purity of the air is the only reason I can offer for our having paid more attention to heating than to ventilation. The need of pure air in our cities is a matter of education. What is not considered as absolutely necessary to life is handled more sparingly, and often, in the building of homes, actual necessities are neglected to further the demands of our modern life.

The question of cooling our rooms is fast asleep. No doubt the great cost of a cooling system alone prevents its consideration. Yet it seems that people richly blessed, who give large sums of money for unnecessary articles, ought to be willing to pay for a pleasant and healthful cooling apparatus for their homes. By the use of well-known simple methods it is possible to keep off much of the intense heat. This matter could be considered with profit by our railroad and steamship authorities.

Though I have shown in the foregoing that, in some ways, the science of heating and ventilation has reached a high state of perfection, I cannot refrain from saying that in others it is far from being what we would wish. Hence we must put our hands on the sore spots without fear. In each undertaking there are two things to be decided: giving a contract and accepting a contract. The giving can be done either without or with competition. Giving contracts without competition need not be discussed here, as it is usually a matter of confidence or trust, and if a contractor, in a case of this kind, erects an apparatus that defaults because he did not perform his full duty, the odium will affect him alone. He needs no sympathy.

The awarding of contracts by competition occurs in practice either through open competition, by bidding on a prepared set of plans and specifications, or by each bidder submitting his own plans and specifications. In the latter case his specification is looked upon as a catalogue and price-list, there being no credit given for the amount of knowledge and brain used in preparing it. Mental work cannot be sold by the lineal yard. If the profession of heating and ventilating is a trade, then the submitting of plans, &c., is admissible; but, in view of the fact that we cover a field of science and an ac-

knowledgeed profession, the submission of plans and specifications without being paid for them is an imposition.

Some city and State governments are having their own engineers prepare plans, which is a practice that should be stopped. This not only checks the advance of the science, but prevents many improvements; and necessary parts, which conduce to better regulation and control of the system, have to be dropped in order to make the work as cheap as possible.

In open competition, where, say, five bidders compete, the owner or architect has the benefit of the best thought of five sets of brains, as each man has ideas of his own. If the successful bidder on work prepared by a city engineer be an experienced engineer there is some hope for the work; but if a new and inexperienced firm gets the work it is always far from being a success.

The members of this society have only themselves to blame for the present state of affairs, and I suggest that, in future, you insist that plans be paid for, and that open competition be allowed in the matter of design. In no other competitions should an earnest engineer take part—and no municipal or State engineer should lend himself to it. This is for the general good—I have no personal interest in it.

Another thing I find wrong is the asking for bids for heating without specifying whether it be steam or water, with the result of firms offering the different systems attacking each other fiercely and without good reason. We ought to congratulate ourselves on having two such good systems.

It is only on very large work that this general competition should be recommended to bring out what is best. Otherwise, there should be a fixed programme. Then to decide which is the best system, and which the cheapest, would be the work of the municipal engineer, who can be a welcome link between theory and practice, and, I add, he will be the bridge, provided he doesn't block it with his own ideas. He can do the work so often attempted by the architect, who, because of his many other duties, is so unfitted to perform it.

Then there is the work of testing the apparatus, and making records, and thus advancing our profession. Our colleague Krell once said "There are too few measurements taken," and, I add, it is a fact that the municipal engineers ought to do more measuring and publish these results for the general good.

The default of many systems is not to be charged to improper attention, which fact was demonstrated during the past severe winter. In judging mistakes it is well to consider whether it is an ordinary or extraordinary one. Extraordinary mistakes are not to be prevented at times and should be excused, for it is the engineer who has the courage to experiment that is liable to err. Hence we can ask that he be judged leniently. But for the ordinary mistake it is different. Here the guilty party—except in rare cases—makes his default owing to the influence of insane competition. False economy at the start invariably makes the work more expensive in operation and repairs. The real economy is brought about by thorough figuring, and when Mr. Krell says "We do too little measuring," I will add, "and too little figuring." Some engineers are striving to reduce this brain work, but only figuring will afford a guarantee for the effect of an apparatus and the economy of its operation. This attempt to reduce the amount of figuring is also apparent in the latest literature. I have always held for simple methods of figuring, but only when simplicity is reached without expense to safety. The excuse for not figuring thoroughly is the lack of time; this excuse cannot be accepted.

An architect that cares for his art will figure everything repeatedly, and why should not our profession do the same? The authorities should not award any work until the figures of the contractor have been thoroughly looked over by the engineer.

One fault that helps to increase the number of defaulting jobs is with the public that use them. It is really touching to see them freezing in their rooms, and speaking about cold drafts, but never thinking of refusing to accept the apparatus, because they believe it

must be so. If the room is not properly warmed the layman says: "It is hard to heat." The expert says: "The job is no good."

I only wish, and I proclaim it to all the world, that the public would become more hard hearted, that every apparatus that is not a perfect success should be shown up, the defects publicly proclaimed, and that they be told that such failures are unnecessary. In cases of this kind, to remain quiet is damaging to our profession.

For the newly organized contracting branch of the society I have the fullest sympathy, as I take it for granted that their object is to advance the mutual interests of all connected with the profession. If this society strikes the right road, and holds it, success, I am sure, will not be wanting. May the society strive in the direction that the profession of heating and ventilation will not be followed merely to earn bread, but also to work for the health of our people, so that our profession will present to us great, earnest problems for keeping and advancing the general good of the nation.

New York City Notes.

Trade still continues brisk, with nearly everybody busy. Good journeymen are in demand and helpers very scarce. Many jobbing and overhauling plumbers are complaining that they are unable to make collections promptly.

* * *

The Brooklyn journeymen have attempted to solve the apprentice question by prohibiting the employment of helpers for five years from October 1. Whether this will solve the problem of too many in the trade or not remains to be seen.

* * *

The plumbing trade has lost a staunch friend in the death of Sylvester Murphy, one of the superintendents in the Building Department for Manhattan and the Bronx.

* * *

Alexander Law is busy with a seven-story apartment house at Hamilton place and 141st street. B. P. Eldridge is doing the plumbing in the Caledonian Insurance Company's 12-story building at 50 and 52 Pine street, the residence of J. S. Barnes on Seventy-ninth street between Fifth and Madison avenues, and the Earle Hall at Columbia College. Reynolds & McMahon have just started work in an eight-story apartment at Ninetieth street and Park avenue.

* * *

Probably the finest private stable in the city will be that of W. B. Leeds, on Eighty-eighth street, near Park avenue, where the plumbing is being done under the supervision of Geo. F. McQuillen of the Wells & Newton Company.

The Market for Plumbing Materials.

The scarcity of plumbing materials, while not entirely past, may be said to have been somewhat alleviated. It has come to light since the settlement of the steel strike that there is more iron pipe available than at one time was considered to be within reach. The season has now advanced to a point where many of the rush demands have been satisfied and some time can be allowed to furnish the material still wanted. Sanitary, earthen ware and enameled iron goods are still more delayed in shipment than is agreeable to contractors, and other lines continue in sufficiently urgent demand to make some waiting necessary in the completion of large work. The outlook seems to favor the expectation of a good trade for the balance of the year. This condition is not confined to any one locality. Advices from west of the Mississippi, the Central States and the East all reflect about the same condition.

MULVEY & Fox, Trenton, N. J., have the contract for heating St. Patrick's Roman Catholic Church, rectory and school in that city, at their bid of \$2435.

Enlarged Bathtub Plant.

The Day Metallic Mfg. Company have completed the extension and enlargement of their works at 210-212 Sixth street and Jones avenue, Detroit, Mich. It is now in operation to the full extent of its capacity, manufacturing Day's steel enameled and Day's steel clad bathtubs. The enlarged plant has more than double the capacity it had before the change. The present works of the company occupies a four-story brick and stone building, having a front of 40 feet on Sixth street, and a depth on Jones avenue of 185 feet. Additional machinery and other appliances needed in the various departments of the works have been added, as well as an increased office and showroom. The company report an excellent business both at the Detroit plant and the New York City branch. One of the late circulars of the company is devoted to Day's folding bathtubs, made in three different styles and equipped with a suitable water heater adapted for burning gasoline, artificial or natural gas, or kerosene oil.

Heating and Plumbing Notes.

G. B. MOORE & Co., Springfield, Mass., have recently completed an extensive job of plumbing in the Springfield City Hospital.

THE EATON, COLE & BURNHAM COMPANY, Bridgeport, Conn., have recently secured a plot of about 10 acres at the west end of the city, with a view to enlarging their works. The company contemplate greatly enlarging their facilities. They will gradually add new buildings, until the old plant is dismantled and the entire industry moved to the new location. The plans in consideration contemplate that some five years will be needed for the change. The buildings to be erected in the near future are an iron foundry, 150 x 300 feet, and a tapping and fitting building, 50 x 150 feet. There will also be a fire proof pattern safe 150 feet in length and of suitable width. The buildings will be of brick construction.

THE Board of Education of Niagara Falls, N. Y., have awarded the contract for plumbing and wiring the new High School building to Oliver & Co. of that place, at their bid of \$7780. The heating contract was secured by the Fuller & Warren Heating Company of Boston, Mass., at their bid of \$8344.

FRED. FINN and Fred. Johnson have been appointed as the practical members of the Board of Plumbing Examiners by the Board of Health of Bay City, Mich. They will pass upon the competency of plumbers for plumbers' licenses.

J. H. EDWARDS, 59 Park place, New York, who represents the Aermotor Pumping and Power Wind Mills and manufacturers of Wood and Galvanized Steel Tanks, Pumps, Wrought Iron Pipe and Steel Structural Work, has just returned from a Western trip, in the course of which he spent some time at the factories. He reports finding a very large demand for his various lines of goods. The factories have been considerably behind all summer and are still behind, owing to the steel strike, but are now catching up with their orders slowly, as material is coming in more freely.

JOHN H. STEVENS died at his residence, at Cambridge, Mass., on October 2. He is a well-known plumber, having been in the business for a number of years at 694 Massachusetts avenue, in association with Charles D. Cade.

THE Borough of Wallingford, Conn., has let to the McCormack Steam Heating Company of that place the contract to lay 900 feet of 12-inch sewer pipe.

HUNGERFORD & GRANT, Clayton, N. Y., have been awarded a contract for plumbing on Hickory Island, which is just off the international boundary line, necessitating the temporary location of a Canadian customs officer at the island until all the materials are landed. Those employed are required to live there while at work.

THE NEW BRITAIN STEAM HEATING COMPANY, New Britain, Conn., are placing a hot water heating system in the residence of Richard Murray, at Berlin, Conn.

THE NATIONAL STEAM ECONOMIZER COMPANY of Springfield, Mass., are installing a heating system in the new St. James' Church, at Brightwood, Mass.

"THE POOR BRITISH MANUFACTURER," according to a writer in the *Australasian Hardware*, "is always being nagged at, like the henpecked husband. 'He is so slow;' 'he will lose his trade if he does not wake up;' 'his ideas are antiquated,' &c. Yet he survives it all, living to a venerable old age and leaving behind him when he dies a good name and a good deal of property." With this fact staring him in the face, the writer supposes it is of little use to supply the following growl: "In Sydney, New South Wales, and its suburbs, the American Porcelain Enameled Iron Bathtub is fast ousting the British, for the following reasons: 1. It is cheaper; 2. The shape is likod better; 3. The quality is A 1 and the finish is superior. It may not be quite such a serviceable article as the English production; nevertheless the people will have the American design, and it only, and the British manufacturer gets none of the trade."

A FIRE recently visited the plumbing establishment of Schreiber & Reinhardt, at Lebanon, Pa. The loss was partly covered by insurance.

THE contract for putting in new Incandescent Lights in the building of the Phelps Publishing Company has been awarded to P. C. Fltzpatrick, Springfield, Mass., who is also placing 40 Lights in the mill of the Orchard Company.

THE BOSTON ROLLING MILLS, owned by the National Tube Company, McKeesport, Pa., started up last week, the men returning to work as individuals. No scale will be signed for this plant, but Amalgamated wage rate will be paid. With the resumption of operations at this works all of the manufacturing plants in the McKeesport district are in operation.

LEON M. LOEB, general manager of the Standard Sanitary Mfg. Company for the United Kingdom, arrived in Pittsburgh last week for the purpose of making an inspection of the plants of his concern located in that city and vicinity. Mr. Loeb states that the demand in England for Sanitary Goods made in Pittsburgh is steadily growing, and will continue to expand.

PUBLIC Building Commissioner George H. Elder of West Newton, Mass., will receive bids until October 15 for plumbing a new school building at Newton Center, Mass.

QUARTERMASTER S. B. JONES, Governors Island, N. Y., will receive bids until October 24 for a steam heating plant in the quartermasters' storehouse at Governors Island.

A FIRE, doing a slight damage, visited the plumbing establishment of Doohar & Seager, at Niagara Falls, N. Y., last week.

DIRECTOR of Public Safety F. L. Wormser of Scranton, Pa., has been holding examinations of applicants for journeymen plumbers' licenses, consisting of practical work and the designing of plumbing systems on plans of buildings furnished for the purpose.

THE SERRICUT METAL COMPANY of Providence, R. I., have purchased the Phenix Mill, in East Greenwich, from Samuel Williams and will run it as a branch of their establishment, for the manufacture of Copper and Brass Goods.

THE ALEXANDER FURNACE & MFG. COMPANY, Lansing, Mich., report that trade on their Warm Air and Combination Warm Air and Hot Water Furnaces and Acetylene Gas Machines is very good, and that prices are holding better than last year. They also point out that where heating contractors understand combination heating and make a success of it there is an increased demand for the Warm Air and Hot Water Furnaces.

B. J. LAMBERT, city clerk of Merrill, Wis., will receive bids until October 18 for installing a heating plant in the new High School Building at that city.

STEWART A. JELLETT of Francis Bros. & Jellett, Philadelphia and New York, who sustained a considerable shock in a railroad accident near Somerville, N. J., and has been in the hospital there since, is now reported to be making rapid strides toward recovery. This news

will be welcomed by his many friends in the heating trade.

HENRY B. GOMBERS, secretary of the National Association of Master Steam and Hot Water Fitters, has arrived in New York from a trip abroad.

THE Mayor of Lewiston, Maine, will receive bids until October 21 for a heating and ventilating apparatus and plumbing system in the new Lewiston High School building.

E. D. HORNBROOK, Kansas City, Mo., has the contract for ventilating the Emery-Bird-Thayer Dry Goods Company building, which is said to be one of the most extensive ventilating systems that has ever been installed in that city.

THE plumbing shop and stove store of Alonzo A. West at Malden, Mass., was visited by a fire on October 8, involving damage to the extent of \$12,000, which is partly covered by insurance.

NELSON S. THOMPSON, one of the United States inspectors of heating and ventilating apparatus, recently inspected the new heating system in the Custom House at Atlanta, Ga., installed by the Atlanta Steam Heating Company, who derive considerable pleasure from the fact that the plant was pronounced entirely satisfactory.

P. D. RAYMOND of the Chadborn Mfg. Company, Newburgh, N. Y., is at Queens equipping the 23 greenhouses of the Cottage Gardens with his company's system for the control of the heating and ventilating of buildings.

THE student of the heating problem could find many things to interest him at the exhibition of car heating apparatus made at the twentieth annual meeting of the American Street Railway Association, held in the Madison Square Garden, New York, this week. Many different electrical heating apparatus were shown, besides other systems that have long been under practical test in use.

THE CENTRAL IRON & COAL COMPANY, Tuskaloosa, Ala., an allied interest of the Central Foundry Company of 116 Nassau street, New York City, were incorporated in March with a capital of \$750,000. They have acquired large tracts of red and brown ore lands and 4000 acres of coal lands about 20 miles from Tuskaloosa, where work has already been started upon a large modern blast furnace and coke ovens. As soon as these are completed a well equipped foundry will be erected in close proximity to the furnace. A considerable amount of development has already been done on the ore fields, and operations are so far advanced that by the time of the completion of the railroad, which is now in course of construction, to the furnace, 2000 tons of ore per day can be shipped. The Central Foundry Company advise us that it is not their intention to enter the field of competition on pig iron, but simply to produce their own raw material. The officers and directors are: Joseph Lodge, president; George F. Ross, vice-president; Winthrop L. Rogers, secretary and treasurer; John Reid, Chas. Smithers, Chas. B. Alexander and Herbert Taylor.

New Firms and Changes.

HEALY & WEEKES are a new firm in the plumbing business at Watertown, N. Y. Fred. A. Healy, the senior member of the firm, has conducted a plumbing business at the location of the new firm, 14 Franklin street, for the past five years. John M. Weekes is the son of John Weekes of the plumbing supply house of Hunting-Weekes Company. The new firm, in addition to plumbing, will do a gas, steam fitting and tinsmithing business.

THE A. H. CLEARY PLUMBING & HARDWARE COMPANY have been incorporated at St. Louis, Mo., with a capital stock of \$3000, half of which is paid in. M. J. Cleary holds 28 shares, and A. H. Cleary and C. F. Bauer have one share each.

THE KELLY & McALINDIN COMPANY have been incorporated at 74 Smith street, Perth Amboy, N. J., with a capital stock of \$100,000, by Edward M. Kelly, James E. McAlindin, John McAlindin and Julia L. Kelly, to do a plumbing and gas fitting business.

HANLON & MURPHY are a new firm, composed of Mark J. Hanlon and James J. Murphy, who have purchased

from the estate of the late James Ahern the entire plumbing, heating, gas fixture, and electrical business conducted for years at 280 Asylum street, Hartford, Conn. Both men are thoroughly acquainted with the business, Mr. Hanlon having been for 18 years the manager and attending to the details of the work, and having general supervision in carrying out contracts. Mr. Murphy for 15 years was superintendent of the plumbing department. The new firm will also do electrical construction work and will carry a fine line of Gas and Electrical Fixtures.

THE FLYNN & EMRICH COMPANY have been incorporated at Baltimore, Md., with a capital of \$80,000, by James Flynn, James E. Flynn, William A. Riordan, Sophia M. Emrich and Kate A. Flynn, to deal in all kinds of Machinery and Steam and Hot Water Heating Apparatus.

THE PARIS STEAM HEATING COMPANY of Paris, Texas, have been incorporated, with a capital of \$10,000, by John A. Porter, F. N. Stormont and William F. Little.

WILLIAM F. McCABE and James McCabe are a new firm in the plumbing business at Ware, Mass.

THE GARTH COMPANY, manufacturers of Plumbers' Supplies, are a newly incorporated concern in Montreal, Canada.

R. F. STEWART, formerly of Beaver and Allegheny, Pa., has opened a plumbing shop in the Coleman store on East Pike street, Canonsburg, Pa., under the name of the Canonsburg Plumbing Company.

LECTURES ON STEAM ENGINEERING AND ELECTRICAL WORK.

For the past few years a course of lectures to journeymen steam and electrical engineers have been given at the New York Trade School, First avenue and Sixty-seventh street, New York City. The interest in the lectures has proved sufficient to attract quite a number of attendants. A course of ten lectures in each of these lines has been prepared by Arthur A. Hamerschlag for the coming season, and a ticket for the full course will cost but \$1. It is the aim of the management of the Trade School to make a greater success of this branch of their work this year. The lectures aim to provide information that will be of value to the practical engineer.

It is pointed out that the care and management of engines, boilers and fires, in order to obtain economically the greatest efficiency, is the most important consideration in the operation of power plants. Modern methods in the care of power plants will be discussed and the construction of the apparatus explained. The lectures will be practical rather than technical in treatment, and at the conclusion questions bearing on the subject will be received and discussed. The lectures in this course will be given every other Wednesday night until March 5, beginning October 23. The subjects for the lectures are as follows:

"The Boiler, Water, Fire and Return Tubular." Construction, purpose and where best adapted.

"The Boiler, Bursting Pressures, Rivet and Tube Strength Tests." Methods of calculating capacity, safety valves, &c.

"Grates and Grate Bars." Fixed, shaking, sectional, advantages and disadvantages, size and capacity.

"Flues, Drafts and Fires." Calculating size of flue, height of chimney, forced draft, methods of firing, &c.

"Boiler Capacity in Horse-Power." Methods of calculating horse-power based on heating surface.

"Quantity of Water and Cubic Feet of Steam per Horse-Power." Boiler efficiency, pumps, injectors, &c.

"Low Pressure, Slow Speed Engines." Construction, pressures, speeds, method of regulating, &c.

"High Pressure, High Speed Steam Engines." Their construction, operation, efficiency.

"Calculating Horse-Power." Piston speed, cylinder diameter and revolutions.

"Governors, Valves, &c." Fly ball, centrifugal and inertia governors, poppet, throttle, slide and telescoping valves.

"Setting Eccentrics."

"Direct Coupled Electric Lighting Units." Service and operating conditions, methods of lubricating, reversing, indicator cards.

"Practical Demonstration in Engine Room."

The lectures for journeymen electrical workers will be given on every other Friday night until March 14, beginning November 1. It is pointed out that many electrical lectures are too deeply scientific for the practical workman, whereas these lectures have been arranged with a special view to meeting his needs. They will consist of simple talks, illustrated by experiments and demonstrations, such as will be useful to the electrical journeyman in his every day work, relating to materials, the proper methods of doing work, and the explanation why work is done in a certain way. Questions from those who attend the course will receive consideration at the close of the lectures. The subjects for the lectures are as follows:

"Volts, Amperes, Ohms." A simple demonstration and explanation of the units of pressure, quantity and resistance.

"Alternating and Continuous Currents." Their nature and method of production.

"How to Calculate the Size of Wires." For feeders, mains and branches; also for light and power.

"Dynos or Generators." Construction, principle and capacity; for continuous currents; alternating and pulsating currents.

"Electric Motors." For continuous currents, shunt and series; for alternating currents, induction and rotary field.

"Methods of Testing." Motors, dynamos, arc lights, telephones, electric bells, insulation, resistance, &c.

"Wiring Systems." Three-wire Edison, molding, cleat, insulator, conduit, iron pipe, flexible steel, &c.; junction boxes, bushings, &c.

"Switchboards, Rheostats and Circuit Breakers." Voltmeters, ammeters, &c.; construction of each thoroughly explained; starting boxes for motors, &c.

"Chemical Electricity." Primary and storage batteries; efficiency, operation and construction; principles employed.

"Isolated Plants." Practical demonstration in dynamo room under service conditions.

Aluminum in California.

A deposit of alumina has been discovered in Kern County, Cal., in a ledge from 100 to 600 feet wide, which has been traced nearly 26,500 feet, says *Mining and Metallurgy*. At a depth of 200 feet the ore is still as wide as on the surface. The property is located about 17½ miles west of Mojave, on the Southern Pacific Railroad. The ore is of a decomposed metallic nature, containing iron, magnesia and silica. The assays secured from the ore have run as high as 31 to 35 per cent. alumina. Besides the values in alumina, quartz ledges have assayed from \$2 to \$39 in gold per ton. Samples of the alumina have been sent to the refinery for a test, and a short time will tell whether California can produce aluminum for the markets of the world. This section of Kern County is one of the most ideal places in the world to mine in, as there is plenty of water and timber for mine use and fuel.

S. G. Hobson, the London representative of *The Iron Age* and *The Metal Worker*, is now in this country to confer with exporters of iron, metals, machinery, hardware and metal goods of all kinds as to the best means of developing business. He will visit the leading American cities and will be pleased to supply any information to those interested in the export trade.

At Menzies, West Australia, four camels were recently seen harnessed to the municipal road roller, being employed in leveling a new cycle path. The advantages of the camel for this sort of work are obvious, as it does not cut up the ground as horses do. But then camels are not readily available for use in this country.

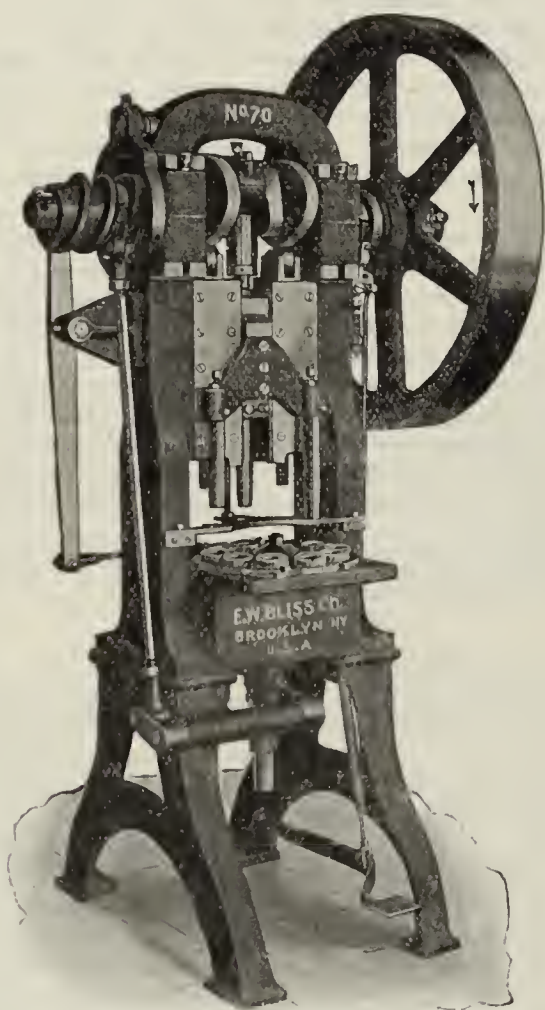
The Largest Drawing Press.

Referring to an item in *The Metal Worker* of September 28, regarding a German drawing press recently installed in an enameled ware factory in Canada, which was claimed to be the largest sheet metal drawing press in America, the E. W. Bliss Company, Brooklyn, N. Y., write as follows:

"We wish to state that we have built and shipped to various parts in the United States a number of drawing presses considerably larger than the one to which attention is called. These presses weigh 125,000 pounds and will draw sheet metal articles from the smallest up to pans, sinks, &c., 48 x 28 inches. We have also built machines much larger than these, weighing from 150,000 pounds, but these have been for customers in Europe."

The Bliss Reducing Press.

A new type of double action reducing press has been recently designed and built by the E. W. Bliss Company of 11 Adams street, Brooklyn. It is intended for



The Bliss Reducing Press.

redrawing tin foil bottle caps from the smallest to the largest champagne tops, caster parts, burner shells, and many other articles which have been previously cut and drawn in double action presses, or single action presses in connection with combination dies. By means of an automatic dial feed, operated by a bell crank from the main shaft, the operator can easily place from 50 to 70 first operation shells on the dial plate per minute. As the press is arranged to carry one, two or three reducing punches, from 50 to 210 operations per minute can be performed without loss of time for intermediate handlings. The dial plate is so arranged that the bushings may be easily changed to suit different sizes of shells. To facilitate the rapid action of the press, it is supplied with an automatic knockout for the dies and a positive stripper for the punches. The stroke of the outer slide of the press is $3\frac{3}{4}$ inches; of the inner slide (or plunger), $7\frac{1}{2}$ inches; both of which strokes have an adjustment of $1\frac{1}{2}$ inches. The press will draw in depth

up to 3 inches; there are three openings in the bed, each $4\frac{1}{2}$ inches in diameter, spaced to suit a dial for three operations, as shown in the cut; the width between uprights is $16\frac{1}{2}$ inches; the height over all is 90 inches.

Merchant's Red Book.

Merchant & Company, Incorporated, of Philadelphia, with branches in New York, Brooklyn, Baltimore and Chicago, have just issued what they term their Twentieth Century catalogue, consisting of 138 pages, illustrated by fine half-tone engravings and line drawings, showing the various departments of their works and the large line of goods which they manufacture or handle. The catalogue is of serviceable shape, 6 x 8 inches, bound in a deep red cover and provided with a cord for hanging. In the opening pages illustrations are given of the company's tin plate, smelting and refining works, and of their general and private offices in Philadelphia. Interspersed through the succeeding pages are views illustrating the process of manufacture of tin plates, solder, Babbitt and newspaper metals, also of the Star ventilator department, and the International Sprinkler Company's factory, which is controlled and managed by the concern. Merchant's well known brands of high grade roofing plates, which are manufactured exclusively at their own works, occupy several pages. These include Merchant's Old Method, Merchant's Roofing, American Old Style, Alaska, Camaret, Genuine Worcester, Emelyn and Crescent. Hickory, Empire, Palm, Elsie, Kismet, Stanley and Arch are other grades of roofing plates made by the firm. Attention is also called to Merchant's continuous roofing tin in rolls, and to the large sizedterne sheets made by the firm adapted for car roofing, eave troughs, conductor pipe and cornice work. The company also make a line of high grade bright tin plates and bright tin sheets, which they offer in a number of sizes and gauges. Tables of standard sizes, gauges, sheets and net weights per box of tin plate and taggers tin and black taggers are presented, as well as tables to compute the price of any size of tin plates when basis price per box is given. A number of pages are devoted to solders, Babbitt and anti-friction metals and newspaper metals made by the firm at their smelting works.

Merchant's Spanish tiles, made of sheet metal, are given special prominence. These tiles are furnished with a special interlocking device which is easily adjusted and claimed to be absolutely storm proof. They are made in copper, tin plate, black sheet and galvanized iron. Ridge roof tiles for siding and roofing follow, together with Star ventilators made of galvanized iron, steel, copper or brass in all sizes to meet every demand. These ventilators are made with either conical or flat top, the latter being of glass to admit light. Among other metal goods handled by the house to which attention is called are sheet copper, copper bottoms, seamless brass and copper tubes, brass tubing, brass and bronze in sheets and rolls, brass and copper wire, cold rolled cornice copper, and copper and brass products of all kinds, galvanized and black sheets, Russia and planished sheet iron, Wellsville polished sheets, corrugated roofing and siding, steel roofing in large variety, rock faced brick, sheet zinc, lead pipe and sheet lead, eave trough, gutters, gutter hangers, miters, Perfection cut-offs, cast iron leaders, shoes, and sewer connections, galvanized conductor elbows and shoes, conductor heads, finials and cresting blocks, spiral pipe, and in fact every kind of material used by the roofer and cornice maker are shown by means of cuts in this catalogue. A long line of goods for the use of stove men and plumbers is also included, as well as tinsmith's tools and machines in large variety. Numerous tables of weights, together with a well arranged alphabetical index, combine to make this catalogue a valuable handbook for metal workers, stove dealers, plumbers and others interested in similar lines.

THE DEMMLER WORKS of the American Tin Plate Company, at Demmler, are to be increased from 11 to 24 mills.

FLASHINGS.

THE GEORGE F. WHEELLOCK COMPANY, 107-109 South Tenth street, Birmingham, Ala., inform us that they are doing a good business, having a large number of contracts for Roofing and Galvanized Iron Cornice Work. They report the prospect as very bright.

THE last ten hot mills of the Shenango Tin Plate plant of the American Tin Plate Company, at New Castle, Pa., were placed in operation last week. The other 20 mills of the Shenango plant, as well as the entire Greer works, have been in full operation for some time.

J. K. SMITH of Waterbury, Conn., has the contract for roofing the buildings of the Plume & Atwood Mfg. Company and the Colonial Trust Company in that city.

J. H. FRANTZ, formerly manager of the American Sheet Steel Company's plant at Piqua, Ohio, has been appointed division superintendent for the company, with headquarters at Canal Dover, Ohio. He has been succeeded at Piqua by Charles L. Suessman.

THE GRISWOLD, RICHMOND & GLOCK COMPANY, Meriden, Conn., have the contract for the Galvanized Iron Work in the new school building at Cromwell, Conn.

THE ALAN WOOD COMPANY have broken ground for the new Sheet mill they propose erecting at Ivy Rock, near Conshohocken, Pa.

THE DOWMAN MFG. COMPANY, 20 and 22 Trinity avenue, Atlanta, Ga., are distributing a leaflet calling attention to their Dixie Ventilator, which is manufactured in 36 sizes, from 2 to 60 inches in diameter. These Ventilators, the firm state, are indorsed by prominent architects throughout the South. They are manufactured in the firm's own shops of the best materials. The company are also sending out a circular in the interests of their Galvanized Iron and Zinc Capitals and a Chimney Cap which they claim to have put up in thousands of cases without a single failure. The firm are also manufacturers of Metal Cornices, Skylights, Crestings, Finials, &c., and contract for all kinds of Tin, Slate and Galvanized Iron Work and Metal Ceilings.

FRIEDLEY & VOSHARDT, 194-200 Mather street, Chicago, Ill., manufacturers of Sheet Metal Architectural Ornaments, Statuary, Steel Ceilings, &c., advise us that they have enjoyed an excellent business during the summer months and are looking forward to a large fall and winter trade, all indications pointing to that end.

ONE result of the ending of the strike in the Sheet, Hoop and Tin Plate mills has been that the members of the International Protective Association of Tin Workers have decided to work up Black Plate in the nonunion mills of the American Tin Plate Company. It will be recalled that this class of labor coat the Plates and are not eligible to membership in the Amalgamated Association, but have an organization of their own. The fact that these men will work Black Plates rolled in nonunion mills will probably lead to a complete severance of all relations between the two organizations.

THOMAS SHARPE, Newport, R. I., has the contract for the Metal Work and Tin Roofing for the addition to the Public Library building in that city.

THE HUMBERT WORKS of the American Tin Plate Company, at Connellsville, Pa., a six-mill plant, will be started immediately. The Amalgamated scale will be signed for this mill.

THE AMERICAN SHEET STEEL COMPANY have decided to enlarge their W. Dewees Wood plant at McKeesport, Pa. Ground has been broken for a new annealing department. The three mills dismantled when the company issued the order to remove the plant to Vandergrift will be replaced by new mills. The Wood mill has been in operation for over half a century and has remained in about the same condition for many years past. The improvements now to be undertaken are designed with a view of modernizing the plant and bringing it up to date.

THE national officials of the Amalgamated Association are reported as considering the levying of an assess-

ment for the benefit of strikers who were willing to return to work, but who were turned away. The number of these men is quite large. President Shaffer has made vain efforts to have several blacklisted men reinstated.

THE report that the Youngstown Iron, Sheet & Tube Company of Youngstown, Ohio, had engaged S. V. Huber & Co., mechanical engineers, of Pittsburgh, to draw plans for their open hearth plant is incorrect. While it is true that the Youngstown Iron, Sheet & Tube Company have decided to build a basic open hearth Steel plant, to supply Steel for their Sheet and Tube mills, work on this plant will not be started for some time. However, we can state that the concern will build two Skelp mills, and S. V. Huber & Co. have made plans for these. One will be built immediately, and the other in the near future.

THE MORTON WORKS, at Cambridge, Ohio, and the Banfield Works, at Irondale, Ohio, of the American Tin Plate Company, have been put in operation, the men returning to work as individuals. The Amalgamated scale will not be signed for these two plants.

It is claimed the recent strike in the Hoop, Sheet and Tin Plate mills cost the Amalgamated Association \$82,060 in benefits alone.

It is claimed that the McKeesport Mfg. Company, recently organized at McKeesport, Pa., will build a Sheet mill, to be located somewhere along the Monongahela River, in the Pittsburgh district.

THE LALANCE & GROSJEAN MFG. COMPANY of New York City have begun the erection of a foundry in connection with their mills at Harrisburg, Pa. The foundry will be utilized to make castings for use in the company's mills and their factory at Woodhaven, L. I.

TRADE NOTES.

THE STOVER MFG. COMPANY, Freeport, Ill., advise the trade that the steady growth in popularity and the increased demand for their Ideal and Samson Wind Mills and Ideal Feed Mills compelled them, early in the year, to purchase a new site of large area and to erect a factory there large enough to meet the pressing demands of their trade. A site of 21½ acres in a desirable locality, adjoining the city of Freeport and well situated as to railway communication, was purchased last spring, and the erection of the largest plant ever designed for the manufacture of Wind Mills and Feed Mills has been undertaken, which will increase the output of the Stover Mfg. Company more than threefold. The plant is now being equipped with the most superior machinery, and is furnished with electric power throughout. The company consider that they have now built a large enough factory to meet future demands for years to come.

It is reported from Birmingham, Ala., that a company with a capital stock of \$40,000 are contemplating the establishment in that city of a large plant for the manufacture of Hollow Ware.

GEORGE W. HOFFMAN, 295 East Washington street, Indianapolis, Ind., advises us that owing to the increasing demand for his U. S. Infallible Metal Polish Paste and other specialties he is obliged to increase his capacity by the addition of another building to his present plant.

R. B. MELLON, Arthur V. Davis and other members of the Pittsburgh Reduction Company are reported to be forming a subsidiary company, to be known as the United States Aluminum Company, who will start with a capital of \$25,000. The plant will be located at New Kensington, Pa., where the parent company's Aluminum works is located.

L. & J. A. STEWARD, Tin Can manufacturers of Poultney, Vt., have received a patent on a new lining machine. The machine is used to put a thick liquid on the edge of the Can covers where the seams come when the covers are put onto the Cans. When the covers leave the lining machine they are run through a hot oven on a slowly moving belt. The liquid forms a dried rubber like material when the covers emerge from the oven.

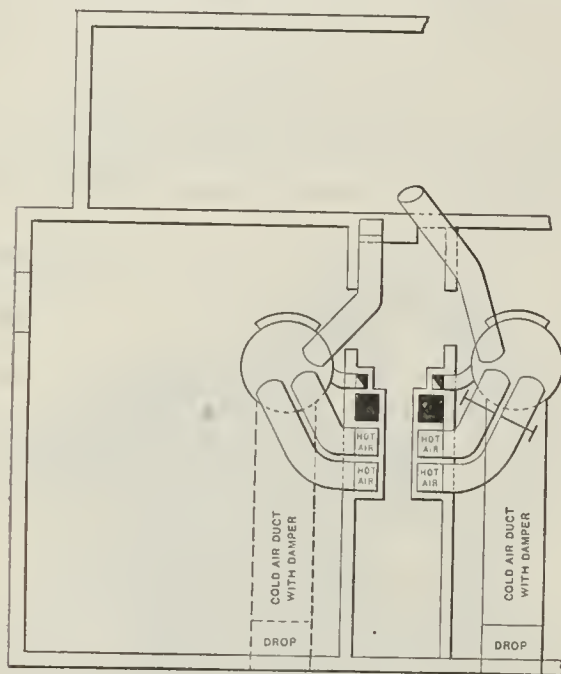
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

FURNACE QUESTIONS ON SCHOOL HEATING.

From W. H. J., Cincinnati, Ohio.—Having read the inquiry and studied the plan presented by "J. N." in *The Metal Worker* of September 21, I submit the following for his benefit. My calculations are based on the



Furnace Questions on School Heating.—Fig. 1.—Basement, Showing Location and Arrangement of Apparatus.

supposition that each school room will be occupied by 40 pupils and have provision for an air supply of 15,000 cubic feet per minute. To do this work at least two furnaces will be required, each having a fire pot 34 inches in diameter. A plan of the basement is presented in

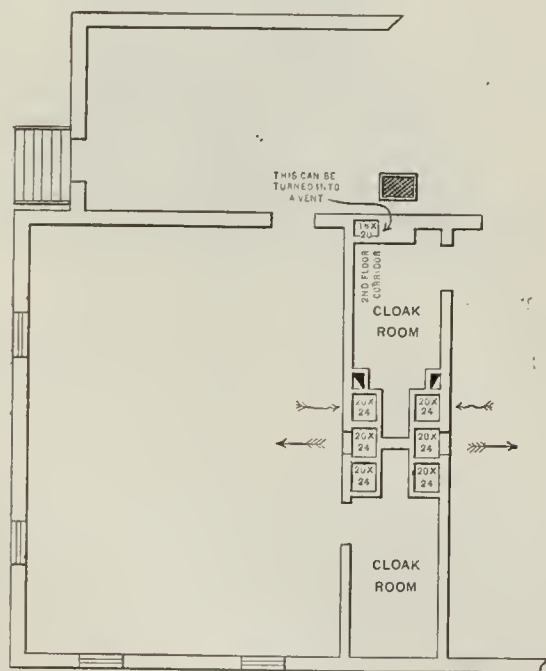


Fig. 2.—Plan of First Floor.

Fig. 1, showing the location of the furnace and hot air pipes. It will be seen that a separate chimney for each furnace near the center of the building is designed to be used, and beside them ventilating flues, beyond which are the hot air flues, the idea being to keep the

ventilating flue warm so as to induce a better current in it. One pipe leads from each furnace to a hot air flue, 20 x 24 inches in size, terminating in a register about 7 feet above the floor in each school room. A pipe leads from one furnace to a 16 x 20 inch flue to heat the corridor on the second floor, while a pipe from the other furnace leads to a floor register in the hall. Fig. 2 is a plan of the first floor, showing the arrangement of the

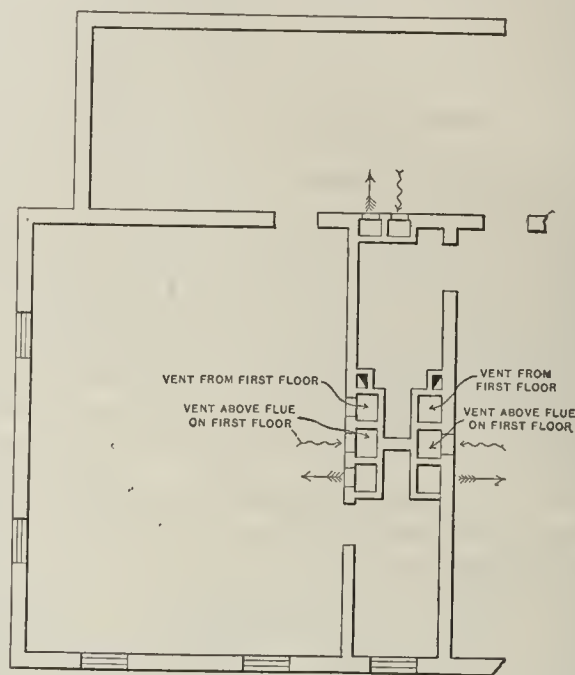


Fig. 3.—Plan of Second Floor.

flues, and Fig. 3 is a plan of the second floor, showing the arrangement of that floor. The cold air duct should have an area equal to that of the hot air pipes, and these pipes should have an area equal to the area of the vertical flues. The sizes have not been given for these pipes as "J. N." may find it desirable to modify the arrangement somewhat and also the sizes. But they should not be reduced, neither should smaller furnaces be used if good heating and ventilation are to be expected.

OIL FUEL BURNERS.

From T. P. B., Taylor, Texas.—I shall be glad to know where I can find the necessary material for installing plants for burning crude petroleum. There is a demand for apparatus of this kind here. I have been considering two methods of my own designing—one using compressed air, and the other expanded air—but prefer to learn of some system which has been practically tested for family purposes in cooking and heating stoves. There is some demand for it in boilers for house heating and for the generation of steam power purposes. Is there some method of spraying the oil in connection with steam, so that it can be burned with a hot flame? I desire to learn where such burners and apparatus can be purchased, and hope the readers of *The Metal Worker* and manufacturers will give me some assistance.

NEW TIN ROOF OVER AN OLD ONE.

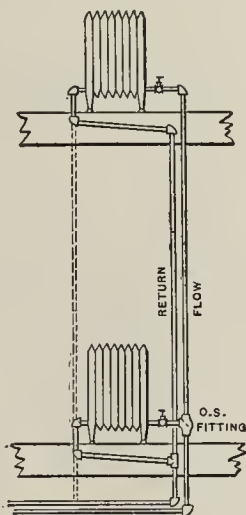
From G. C., Dover, N. J.—As the Letter Box of *The Metal Worker* seems to be sought in all cases of disagreement and divided opinion, I offer a little information on the laying of a new tin roof over another. I have sent with my letter two samples of tin—one that was laid on a roof in 1847 and the other in 1880. The circumstances of the case are as follows: In December, 1880, we had a very severe wind and rain storm on a certain Saturday night, and the roof on a hotel building was partly removed as a result. The cornice on the west end of the building gave way, and the wind got under the roof and tore off about half, rolling the chimneys along with it. Perhaps some may think this looks like a fish story, but my assertion can be verified. The reason I am so familiar with the details is because it fell to my lot to superintend the laying of the new tin roof. That portion remaining on was in such a condition

that an entire new roof was considered necessary. The building was 49 x 50 feet, and the tin was laid flat seam and soldered. I advised that the old roof be removed. The owner was one of those thrifty old souls who would "skin a louse for its hide and tallow," as the saying is. He said he would rather take the chances of losing the whole roof than pay for taking off the remaining half. I informed him that it was not good judgment to lay the tin over the old roof, but as he did not consider my advice very valuable I was ordered to get to work and finish the job without any paper between the two metals. The result of this course, nearly 21 years from the time the new roof was put on, is shown in the condition of the tin, which I think rather reflects to the credit of my judgment at the time. As before stated, the original roof was put on in 1847, and the reason I have had an opportunity to observe the condition of the roof at the present time is that the new owner of the building has put one more story on it. This, of course, necessitated the renewal of the roof.

Note.—Our correspondent has favored us with two samples of tin about 6 x 7 inches in size—one marked 1847 and the other marked 1880. On weighing these samples no appreciable difference in weight was discovered. The older tin shows no marks of deterioration from rust on either side, and on scraping shows a good coating. Although it is a terne plate, it evidently has a larger percentage of tin in the coating than the other sample. The paint also has adhered tenaciously to the old plate, and there seem to be no breaks or cracks, the surface of the plate being perfectly covered, although the thickness of the coating seems to be no greater than that of the plate put on in 1880. The plate that was put on in 1880 looks like a plate of one of the better grades. The paint has peeled from the upper side in numerous spots, and while the plate on the whole is well preserved, there is plenty of evidence of rust on both the painted side and the unpainted underneath side. The plate that was put on in 1880 shows that with care in keeping the top side painted the roof might have lasted many years longer. Still it is not by any means in as good condition as the plate that was put on in 1847.

HOW SHOULD RADIATORS BE CONNECTED?

From B. H., New York.—In answer to the request of "I. R.," in *The Metal Worker* of August 10, he has no doubt received so many suggestions and different ways



How Should Radiators Be Connected?

of connecting radiators for the first and second floor that he must be more or less confused. I would advise him to never connect up first and second floor radiators on a straight line of flow pipe, unless he uses the O. S. distributing fitting. With this fitting, however, a straight line can be used with perfect results. It cannot be done with the ordinary fittings unless a break is made in the line. The sketch presented herewith will give him an idea of what I consider the proper way. If the owner is willing to pay for the work the return pipe should be

run as indicated by the solid lines. If, however, he is not particular as to appearance the return may be run straight down, as shown by the dotted lines.

FORMULAS FOR GAUGE OF METAL IN GALVANIZED IRON TANKS.

From W. A. P., Newark, N. J.—Will you kindly inform me where I can procure the formulas which are used for ascertaining the required gauge of metal in galvanized iron tanks to withstand a certain amount of pressure? That is, I want the formulas which are used to tell the thickness of metal required in a tank of a certain diameter, to withstand a specified pressure in pounds per square inch. If there are any books containing these formulas I would be glad to know of them.

Answer.—There are no direct formulas for thickness of iron for tanks. The conditions in regard to pressure are variable with the requirement for wear and the methods of riveting, and also the added strength due to galvanizing on the seams. As a general rule, a factor of safety of six times the strength of the longitudinal seam should be allowed, and for riveted and galvanized seams a factor of safety of four times the strength of the iron should be allowed. Then, as galvanized plate iron is equal to a breaking strain of about 40,000 pounds per square inch, its factor of safety will be 10,000 pounds. For cylindrical tanks to be limited to 100 pounds pressure and 16 inches diameter, we have one-half the diameter

800
for the multiplier of the pressure, or $100 \times 8 = \frac{10,000}{800} = 0.08$ inch, or No. 12 by the American gauge. Hot water tanks of the trade are made somewhat thicker than this for convenience of making connections and for wear. Books on boiler making give the method for computing strains and the bracing for other forms, which should be the same for tanks.

The Merchants' Legislative League.

A branch of the Merchants' Legislative League of New York State has been organized in Rochester, N. Y., and among the merchants identified with the work are the plumbers, stove dealers and hardwaremen of the city. The officers of the State League are: John H. Simmons, president; J. Frank Wiggins, secretary, and George S. Hughes, manager, all of Utica. The principal objects of the league are described as follows:

1. The repeal of that part of Section 1391 of the Code of Civil Procedure which gives a debtor \$250 exemption from levy and sale under execution in excess of what was formerly exempt.
2. The enactment of an adequate garnishment law, to reach the wages of debtors under proper conditions, and to reach moneys, goods, chattels and property in the hands of third parties.
3. The enactment of a law making the wife equally liable with the husband for all household necessities after execution against her husband has been returned unsatisfied, and the wife has property assigned to her by the husband.
4. The enactment of a law reconstructing the lien law, so as to protect material men and laborers.
5. To secure such other legislation as may from time to time seem necessary, and to prevent the passage of laws detrimental to their interests.

The fire record of the United States and Canada for September, according to the *New York Journal of Commerce*, was unusually favorable, showing a total loss of \$7,645,200, against \$8,334,000 in the previous month, and \$9,110,000 in September, 1900. The year, so far, shows about \$16,000,000 less loss than for the same period of 1900, but is about \$21,000,000 worse than 1899.

There arrived last week in San Francisco harbor from Westport, on the Columbia River, near Portland, Ore., a raft containing 7,200,000 feet of lumber, equal to 15 good sized cargoes. The raft was towed by two Puget Sound tugboats and the trip was made without accident. A large force of men was employed for eight months in constructing the raft, which formed a cigar shaped mass 625 feet long, 60 feet broad and 32 feet deep, held together by 70 tons of chains. The timber is estimated to be worth about \$100,000.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is weak and about $\frac{3}{4}$ c. lower.
Copper remains dull and nominally unchanged.
Pig Lead is very quiet at unchanged prices.
Spelter is more active and about 10c. per 100 lbs. higher.
Antimony is unchanged.
Nickel remains firm and active.
Aluminum is unchanged.
Tin Plates are quiet, with prices still high for spot.
Sheets are a trifle easier both as to delivery and demand.
Old Metals are firm and fairly active.
Sheet Copper is in good demand and firm in price.
Foundry Iron is strong and active.
Hardware continues to move in good volume, with prices generally strong.
Wrought Iron Pipe, in heating sizes, is still scarce and high.
Steel Enameled Bathtubs were marked down 5 per cent.
Plumbers' Brass Work remains firm and in good demand.
Solder has been reduced $\frac{1}{2}$ c. to 1c. per lb., on decline in Pig Tin.
Oilers have been advanced.
Roofing Slate is scarce, with prices firm for all varieties and demand large.
Registers are firm on the advance.
Wire Nails are active, with prices steady.
Cut Nails are unchanged.
Wire continues in good demand; prices rule firm.
White Lead prices are firm and the demand good.
Linseed Oil is scarce and firm.
Spirits Turpentine has advanced $1\frac{1}{4}$ c. per gallon.

METAL MARKET.

New York, October 11, 1901.

Pig Tin.—During the entire week the market for Pig Tin has been weak and declining. Business was very light, as the principal consumers are pretty well covered for the balance of the year. Straits Pig in small lots declining to $25\frac{3}{4}$ c. to 26c. per lb., a decrease of $\frac{3}{4}$ c. from the figures ruling a week ago. The weakness of the market is attributed to free offerings and the pressure to sell from the Straits, where stocks were accumulating during the period of our Steel strike. Charles S. Trench & Co., New York, issued, under date of October 1, the following American statistics on Pig Tin:

	Tons.
Estimated stock on spot, New York, Philadelphia and Boston, September 1.....	1,438
Actual arrivals during September.....	2,640
Total.....	4,078
Estimated consumption during September.....	2,400
Estimated stock on spot, New York, Philadelphia and Boston, October 1.....	1,678
Actual afloat from East Indies, shipments to October 1....	2,188
Actual afloat from England, shipments to October 1.....	975
Actual afloat from Holland, shipments to October 1.....	50
Total visible supply, October 1.....	4,891
As against September 1.....	4,476
As against August 1.....	3,478
As against July 1.....	4,068
As against June 1.....	5,427

Copper.—Consumers still show hesitation in purchasing for forward delivery. Buying is going on entirely on a hand to mouth basis. As Lake Copper is mostly procured from the larger producers, consumers needing prompt delivery are obliged to pay the price asked. Consequently, the market for spot Copper may be described as firm, small lots of Lake Ingot being quoted at $17\frac{1}{4}$ c. to $17\frac{1}{2}$ c. per lb., and Casting Copper at $16\frac{3}{4}$ c. to 17c. per lb. Exports this month have started on a rather small

scale, amounting so far to less than 1500 tons, while the imports during the same period aggregated 700 tons.

Sheet Copper.—The demand for Sheet Copper keeps up in a satisfactory volume, and prices continue to be firmly held on the basis of 21c. per lb. for moderate sized lots from store.

Pig Lead.—This article is very quiet at unchanged prices, American Pig in small lots being quoted at $4.62\frac{1}{2}$ c. to $4\frac{3}{4}$ c. per lb. There is still considerable talk about the great producing interests having large stocks on hand. Rumors of an immense combination of Lead interests are also rife. St. Louis advances report a good demand for Pig Lead in that market, at prices ruling the same as a week ago.

Spelter.—This metal has again advanced, owing, it is said, to a rumor circulated in the West which purports that the United States Steel Corporation have taken option in the principal producing plants. It is even said that the options expire on the fifteenth of this month, and that there is a possibility of their being extended in case the plants should not be transferred before that time. The accuracy of this report, however, is greatly questioned by the prominent men in the trade here, who say that the real cause of the advance is Western manipulation. This is explained by the statement that certain large interests in the West had a considerable amount of the metal turned back on them during the Steel strike, and that they are now endeavoring to bring the figure up to a good point so that they can come out easily. It is not believed that the Steel Corporation have any desire to control any of the Spelter plants other than the Edgar Works, which they now own in fee. The market closed very strong. Good Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. St. Louis advances are that the price of Spelter has again advanced in that market on heavy transactions.

Sheet Zinc.—No change has taken place in the position of this article. Jobbers are quoting 600-lb. cask lots at $6\frac{3}{4}$ c. per lb., and smaller quantities at 7c.

Antimony.—Is unchanged, Hallett's being quoted in small lots at $8\frac{1}{2}$ c. to $9\frac{1}{4}$ c. per lb., and Cookson's at $10\frac{1}{2}$ c. to 11c.

Nickel.—No change has taken place in this metal. Prices are firm, small lots being quoted at 60c. to 65c. per lb.

Aluminum.—An active demand continues. Prices are unchanged. No. 1 Ingot, guaranteed 99 per cent. pure, is quoted in small lots at 37c. per lb. and in 100-lb. lots at 35c.

Tin Plates.—The general condition of the market for Tin Plates remains substantially the same as that prevailing for the past few weeks. The demand for prompt delivery is confined to comparatively small lots, as Plates are still scarce and prices rule high, consequently consumers, except such as are forced to purchase Plates for immediate use, are holding off until prices reach a more reasonable level. Spot Coke Plates still command a premium of anywhere from \$1 to \$2 a box above the official prices of the American Tin Plate Company. So far the starting of the Tin Plate mills does not appear to have affected this market to any appreciable extent. Coke Tins are still scarce to the point of famine, jobbers' stocks being practically cleaned out. It will not be long, however, before Plates will be coming into the market again and consumers, wherever possible, are putting off purchasing until the supply is better. A fair business in futures is said to have been placed, and the market, as a whole, is still very firm. While retail quotations are entirely nominal, it may be noted that Coke Tins are now being quoted by jobbers at 20c. to 25c. a box below the high prices ruling for some time past; that is to say, American Coke Plates, I C, 14 x 20, can be obtained in small lots at New York or corresponding

points at about \$6.75 to \$6.90 per box. Prices of Welsh Plates have again declined during the past week.

Sheets.—Although deliveries of Sheets are reported to be somewhat better since the American Sheet Steel Company's mills were started in full operation, they are still hard to obtain for shipment any time within 60 to 90 days. Jobbers' prices on Black Sheets are perhaps a shade easier in the Eastern market, but they are still scarce and almost impossible to obtain in any quantity for immediate delivery. No. 27 One Pass Cold Rolled Soft Steel Sheets are now quoted at about 4.15c., and Galvanized Sheets at 65 per cent. off the list. Some of the outside mills are said to have entered a large tonnage in Sheets for shipment through the first half of 1902. The prices paid by the buyers are to be the same as those in force at the time of delivery by the leading Sheet interest. The demand for Sheets is good, although not quite so urgent as it has been. It was reported this week that two shipments of German Sheet Iron, amounting to an aggregate of about 2000 tons, are about to be made from Hamburg to this country. The Westinghouse interests are understood to be the purchasers.

Chicago advices are as follows: Quite a heavy demand is felt by manufacturers and some orders are being taken by independent mills, but these are not now in a position to promise even reasonably early shipments. Jobbers are having a continued pressure for shipment from local stocks, especially on Black Sheets. The mills recently on strike are making a little better delivery, but the supply of Black Sheets is still far below the requirements of the trade, and it is necessary to pay a premium for such sizes as may be found in stock. The supply of Galvanized Sheets is somewhat better than that of Black Sheets, but assortments are still badly broken. Prices are continued at 4c. to 4.10c. for No. 27 Black Sheets, but 65 off is the ruling rate for Galvanized.

Old Metals.—Scrap Iron is strong and fairly active. Old Metals of other descriptions are referred to as quiet, although prices are well maintained. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	14¾c.
Light and Tinned Copper.....	per lb.	12¾c.
Heavy Brass.....	per lb.	9¾c.
Light Brass.....	per lb.	7½c.
Lead.....	per lb.	4 c.
Tea Lead.....	per lb.	3½c.
Zinc.....	per lb.	2¾c.
No. 1 Pewter.....	per lb.	17½c.
No. 2 Pewter.....	per lb.	8½c.
Tin Plate Scrap, per gross ton.....		\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....		10.50 to 11.00
Heavy Cast Scrap, per gross ton.....		10.25 to 10.50
Stove Plate Scrap, per gross ton.....		7.25 to 7.50
Burnt Iron, per gross ton.....		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Some large inquiries are in the market, but so far as we can learn no important contracts have been closed. There has been the usual rush of shipments from the furnaces and those consumers who stock up for the winter before the close of navigation. This, it is claimed, accounts at least partly for the falling off in the stock of Eastern furnace companies. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$15 to \$15.50; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$14.75 to \$15; No. 2 Soft, \$14.50 to \$14.75; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—The strong buying movement which set in about two weeks since is running at full tide. Large consumers are freely purchasing for delivery running far into next year. Numerous contracts have been made in the past week. This is the season when jobbing foundrymen are making contracts with their customers for the winter, or the first six months of next year, and they are covering their contracts by purchases of Iron. Northern and Southern Foundry Irons are more nearly on an equity. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.00 to 16.00
Local Coke Foundry, No. 2.....	14.50 to 15.00
Local Coke Foundry, No. 3.....	14.00 to 14.50
Local Scotch, No. 1.....	15.25 to 16.00
Ohio Strong Softeners, No. 1.....	16.00 to 16.50
Southern Silvery, according to Silcon.....	15.40 to 15.65
Southern Coke, No. 1.....	15.15 to 15.40

Southern Coke, No. 2.....	14.40 to 14.65
Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—Pig Iron is about as firm and as steady as any article on the list. Sales are moderately large, but they are nearly all for this year's delivery; beyond that the demand is hesitating. For 1901 prices are strong and probably a shade higher. Foundry grades are the strongest article on the list. Prices average a little higher than last week. The general market may be quoted about as follows for city and nearby deliveries, and from 25c. to 50c. less at points within a radius of 100 miles south or west: No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.75 to \$14.90.

PITTSBURGH.—The Pig Iron market continues very firm. The United States Steel Corporation have made further purchases of Bessemer for November shipment. Standard Bessemer for the balance of the year delivery is strong, at \$16, Pittsburgh. Heavy purchases of Foundry Iron have greatly strengthened the market, and prices are higher. We quote Standard Bessemer Iron in small lots at \$15.85 to \$15.90; No. 1 Foundry at \$14.75 to \$15; No. 2 Foundry, \$14.25 to \$14.50, and No. 3 Foundry, \$14 to \$14.25.

CINCINNATI.—The buying movement which has been in progress for the past three weeks shows no signs of quitting. Malls are well freighted with inquiries and the business in sight points to good, steady trading for the next week at least. Most furnace interests are now fully sold up for this year on all grades. The bulk of the present buying is for the first half of next year. A very remarkable feature of the situation is the conservative stand taken by the sellers in regard to prices. Usually prices advance rapidly in the face of such a buying movement as the present one, but now there seems to be a disposition to advance slowly. A few Southern furnaces have advanced prices 25c., but are in consequence selling no Iron. A few outside interests are said to be giving away their differential of 25c. in freight rate. The market is, nevertheless, on the basis of \$11, Birmingham, for No. 2, and strong and steady at that. An advance to possibly \$11.50 would not surprise the trade, and it will likely come soon. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$14.60 to 15.00
Ohio Silvery, No. 2.....	14.10 to 14.60
Lake Superior Coke, No. 1.....	15.10 to 15.35
Lake Superior Coke, No. 2.....	14.60 to 15.10
Lake Superior Coke, No. 3.....	14.10 to 14.60

ST. LOUIS.—The past week in Pig Iron circles has been a very active one, and the influences ruling are considered in every way favorable. A heavy demand continues, and the recent advance in prices does not seem to affect the buying power. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 2 Foundry.....	14.00 to 14.25
Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

CHICAGO REPORT.

Scrap Iron and Steel.—All kinds of Scrap are moving with no specially heavy demand for any one item. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$12.00
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.50 to 10.00
Old Gas Pipe and Boiler Tubes.....	11.00 to 11.50
Cast Borings.....	4.25 to 4.50
Turnings.....	9.50 to 10.00
Horseshoes.....	to 13.00

Old Metals.—The demand is slow. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14½c.
Copper Bottoms.....	13 c.
Copper Clips.....	14 c.
Red Brass.....	13¼c.
Yellow Brass.....	9¼c.
Red Brass Borings.....	11¼c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3½c.
Zinc.....	2.80c.
Tin Foil.....	22 c.
Pewter, No. 1.....	19 c.
Pewter, No. 2.....	10 c.

Old Rubber.—Only a moderate demand is reported. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$23.00	.....
Air Brake Hose.....	42.00	.....
Rubber Shoes.....	.....	7½c.
Rubber Car Springs.....	.....	4¾c.
Inside Bicycle Tubing.....	.....	21 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Sales agents report a good trade, with local stocks equal to the demand. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

There are many indications of the steady movement of business in all parts of the country. The consumption of manufactured products is large, as shown in the excellent trade which the retailers are doing and the activity which prevails in manufacturing establishments. In many lines there is difficulty in obtaining raw material, as the market feels the effect not merely of the steel strike, which caused the stoppage of production for a time, but also in the steady demand made upon the mills by the large business which is doing. Among the Hardware trade the volume of new business coming in to the manufacturers from the merchants is not especially heavy, but is of a character to indicate an excellent state of things in the trade.

In general Shelf Hardware the demand is good, and many manufacturers are unable to supply goods as promptly as called for. In Mechanics' Tools, and in Builders' Hardware the makers are pushed with orders, some of them referring to the existing trade as larger in volume than they have had for years. The amount of building throughout the country is, in fact, one of the indications of the general well being of the people. The character of buildings seems to cover a wide range from large structures in which much iron is used to smaller and less pretentious and less expensive buildings which are going up throughout the country. Prices, as a rule, are quite steady, and in some cases strong. Only a few exceptional lines are regarded as weak. With the satisfactory conditions existing, the excellent crops which have been harvested, the amount of foreign trade which is doing, the trade enters on this last quarter of the year with a promising outlook.

NOTES ON PRICES.

Steel Enameled Bathtubs.—A slight reduction in the price of Sheet Steel Enameled Bathtubs is reported this week. The decrease amounts to 5 per cent. below previous quotations, and is attributed to the efforts of one of the Western manufacturers, who was fortunate enough to secure a shipment of Steel Sheets from the mill, and who made a most strenuous fight for a large portion of the Eastern jobbing trade. The local Tub manufacturers promptly met the new quotation. But little business is said to have been placed at the reduced price. It is considered likely that prices will remain where they now are for some time. The condition of

the market for raw materials for this line of goods does not warrant any other conclusion.

Plumbers' Brass Work.—According to some of the leading manufacturers of Plumbers' Brass Work the present prices on this line of goods are not likely to undergo any changes for some time to come. It seems the manufacturers have been informed that the cost of Copper will remain unchanged until after the first of the year. The demand is steady and the factories are still behind on their old orders. The condition of the market is such as not to warrant any change.

Heating Goods.—The majority of the jobbers of Steam and Hot Water Heating Supplies report a very quiet week. They say that business was not up to their expectations and are at a loss to explain the cause. This should, according to all precedents, be the very busiest part of the season, and dropping off of all rush orders is a surprise to many of the older jobbing houses. The recent decline in the retail price of Wrought Iron Pipe is to some extent accountable for the change, owing to a suspicion on the part of buyers that prices have not yet reached their lowest level. The prices now ruling in this district are not showing a very large profit upon the mill costs, and it will have to be a pretty good sized order that will induce any of the jobbers to shade the present quotations. The supply of Pipe is not at all satisfactory. Some of the heating sizes are still out of the market, and others are held at a slight premium over the ruling quotations.

Registers.—The disposition of most of the manufacturers of Registers is to hold to the higher prices adopted October 1. These prices are said to be adhered to pretty closely in the Eastern market, although some irregularity in quotations may still prevail in some other parts of the country. The claim that prices in the past have been unprofitably low, and the fact that stocks of Registers are by no means heavy, are factors which have tended to the stiffening of the market on these goods. The demand for Registers at the present time is referred to as active and the outlook generally in this department is regarded as satisfactory.

Roofing Slate.—The Roofing Slate market is stronger than it has been for some time past. The demand for Slates this season is unusually heavy, and manufacturers have had difficulty in meeting the requirements of their customers. Vermont Slate, Sea Green, Purple, Variegated and Unfading Green have been in such large demand that stocks of these varieties are greatly depleted. The prices of Sea Green, Variegated and Purple Slates were advanced slightly a month or so ago and quotations on Lehigh Slates were recently withdrawn, owing to the shortness of supply. Manufacturers and dealers state that the heavy consumption of Roofing Slates in the United States this year shows that Slates are growing in favor for roofing purposes. They add that the introduction of Slate roofing in the new sections is constantly being carried on. Stocks of the higher grades of Pennsylvania Slates are fairly large, the demand running mainly to the cheaper qualities, which have become quite scarce. Prices are well maintained and the market for Roofing Slates has a steadier tone than for some time past.

Solder.—Owing to the decline in the prices of Pig Tin manufacturers of Solder have marked down prices from about ½ to 1 cent per pound. Half and Half guaranteed, in small lots, is now quoted at 18 to 18½ cents, and No. 1, 14 to 16½ cents per pound.

Eave Trough and Conductor Pipe.—The trade in these commodities continues good, but there are no special features except a large demand for the goods, the prices of May, 1901, still being maintained without any disposition to shade them on the part of manufacturers.

Oilers.—Several advances have recently been made in Oilers, and the market is in an excellent condition, the advanced prices being quite firmly adhered to. A good many of the jobbers, however, have some goods on hand purchased at former prices, and there is some slight irregularity on this account.

Pumps.—The relations between the manufacturers of Pumps are referred to as much more harmonious than

usual, although there is no formal agreement in regard to prices which includes all of them. Prices, however, are pretty regularly maintained, with an excellent volume of business.

Wire Nails.—Wire Nails are moving in large volume and shipments are being made by mills with considerable promptness. Prices made by outside mills are being generally met, which results in concessions at competitive points. Small lots from store, New York, are quoted at \$2.60 per keg.

Cut Nails.—The demand for Cut Nails continues fair. Prices are said to be somewhat uneven at points where competition is most keen. Small lots from store, New York, are quoted at \$2.18 to \$2.30 per keg.

Wire.—The demand for Plain Wire continues heavy and the mills have not yet caught up with back orders. There is some unevenness in prices of Plain Wire at points of delivery where competition is keen. Plain Wire is sold in a retail way in the New York market at 2.60 cents and Galvanized at 3 cents.

White Lead.—White Lead in Oil continues in good demand. Prices are referred to as being satisfactory. No change has been made in New York quotations, which are 7 to 7½ cents for retail quantities.

Linseed Oil.—The scarcity of Oil is the principal feature in the Linseed Oil market. Crushers have not been able to make prompt deliveries on contracts, but are giving their customers some Oil to keep them going. It is not probable that much relief can be expected during the next week or two. The demand for spot Oil is good and the market firm, City Raw being quoted at 65 to 66 cents per gallon, and Boiled Oil 2 cents per gallon advance on Raw.

Spirits Turpentine.—The slowness with which Turpentine is coming into the Savannah market makes the offering at this point light, and advances in prices have resulted. Higher values have checked business and sales are confined to small lots. Quotations are 38 to 38½ cents per gallon.

A Novel Advertising Dodge.

I recently received, says a correspondent of the *Ironmongers' Chronicle* of London, an ordinary tie-on label sent out by an enterprising American firm. It had a small piece of string attached and I naturally began to wonder what these generous friends had sent, and instantly seized upon pen and paper to write an indignant protest to the "G. P. O." The post office officials had evidently spotted it, too, for on the corner of the address label was written, "came to hand without contents of parcel." When on closer examination I found the following lines upon the back in small but clear type, the plot was revealed and the intention of the sender impressed upon my mind, clear and strong:

"No, there wasn't anything else sent. This is all. But it is not *our* fault. You should know by this time that we would *like* to send you something attached to a tag, by mail, express or freight. Now we have attracted your attention, may we ask you to look over our specimen book, &c. No time like the present, you know."

The London *Ironmonger* reports that in the course of reopening a disused coal mine at Blair Burn, Scotland, some miners' tools and a few wooden shovels, such as were in use 250 years ago, have been discovered. The shovels are all made of wood, some of them being as good as the day they were made. The picks are iron. It is further stated that there are huge blocks of coal lying about, all cut out with the pick, and so large that it puzzles present day colliers to know how the task of cutting them out was accomplished. The pit in question was sunk in 1654 and closed about 1657.

THE new Aluminum plant which the Pittsburgh Reduction Company have just completed on the St. Maurice River in Canada, about half way between Montreal and Quebec, is to be placed in operation at once. The new

plant is designed to supply Canada with Aluminum, and an effort will also be made to secure an export trade with Great Britain. For the present the crude Aluminum will be turned out, but later it is expected that a rolling mill, similar to that in New Kensington, Pa., will be built near the new works. The total cost of the present plant, which has been in course of erection for two years, has been about \$1,000,000. The company have about 10,000 horse-power installed, and will manufacture some 10 tons of Aluminum daily. The product will be shipped by water down the St. Lawrence River.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED OCTOBER 11, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.			
Small lots.	100-lb lots.	100-lb lots.	100-lb lots.
Aluminum Sheet, B. & S. gauge.			
Wider than.	6-in.	14-in.	24-in.
And including.	14-in.	24-in.	30-in.
Nos. 13 to 19.	\$0.42	\$0.44	\$0.47
" 20.	.44	.46	.49
" 21 to 23.	.46	.48	.51
" 24.	.48	.50	.53
" 25.	.47	.51	.54
" 26.	.47	.54	.59
" 27.	.48	.57	.62
" 28.	.48	.57	.64
" 29.	.49	.60	.69
" 30.	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—

Cookson.	10¢ @ 11¢
Ballet's.	8¢ @ 9¢
U. S.	8¢ @ 9¢

Brass, Roll and Sheet. 15¢ @ 20¢

Conductors—

Corrugated.	
Round or Square.	
Galvanized 1/2 or more, N. S. d.	70¢ @ 5%
" Not Nested.	70¢ @ 2 1/2%
" Plain Round, 1/2 or more.	70¢ @ 5%
Nested.	70¢ @ 5%
Galvanized, Plain Round, Not Nested.	70¢ @ 2 1/2%

Spiral Riveted.

Galvanized.	40%
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Lake Ingot.	17 1/4 @ 17 1/2
Casting.	16 1/4 @ 17
Sheet and Bolt.	21¢ @ 22¢ basis
Cold Rolled Sheets.	22¢ @ 23¢ basis
Cold Rolled and Polished Sheets.	23¢ @ 24¢ basis
Planished Sheets.	24¢ @ 25¢ basis
Bottoms, Pits and Flats.	25¢ @ 26¢ basis

Eave Trough, Galvanized

Territory.	L. C. L.	
Eastern.	75¢ @ 10%	Carloads
Central.	75¢ @ 7 1/2%	extra
Southern.	70¢ @ 12 1/2%	12 1/2%
S. Western.	70¢ @ 10%	
Terms, 2% for cash.		

Eave Trough Mitres—

Lap or Slip Jolot. 1st, 25%

Elbows—Plain Adjustable—

Eastern List.	
Tin.	30%
Galvanized.	30%
" Perfect Elbows.	40%

Stove Pipe—

Four-Piece				
	4	4½	5	5½ 6-inch.
No. 1.	.80	.85	.90	1.00 1.05 per doz
No. 2.	.65	.70	.75	.80 .85 "

Elbows and Shoes—

Galvanized. 60%

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R.	R. G.
Soft Steel.	Cleaned.
Nos. 14 to 16.	3.80
Nos. 18 to 21.	3.90
Nos. 22 to 24.	4.00
Nos. 25 and 26.	4.10
No. 27.	4.20
No. 28.	4.30

Russia, Planished, &c.

Genuine Russia, accord-	
ing to assortment.	11¢ @ 11 1/2¢
Do. Stained.	6¢ @ 10¢
Patent Planished.	12¢ @ 11¢

Galvanized.

Nos. 10 to 16.	12¢ @ 13¢
Nos. 17 to 21.	13¢ @ 14¢
Nos. 22 to 24.	14¢ @ 15¢
Nos. 25 to 26.	15¢ @ 16¢
No. 27.	16¢ @ 17¢
No. 28.	17¢ @ 18¢
No. 29.	18¢ @ 19¢
No. 30.	19¢ @ 20¢
36 in. 1¢ @ 2¢ higher.	

Lead—

American Pig.	4.62 1/2 @ 4.75
Bar.	5 1/2 @ 5 1/2
Pipe.	6 1/2 @ 6 1/2
Tin Lined Pipe.	12 1/2 @ 12 1/2
Block Tin Pipe.	37 1/2 @ 37 1/2
Sheet Lead, full rolls.	7 1/2 @ 7 1/2
Sheet Lead, cut.	7 1/2 @ 7 1/2
Old Lead in exchange.	4¢ @ 5¢

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb. 60¢ @ 65¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.	@ 6 1/2
Lots less than 500 lb.	@ 7
Lead, White, in oil, 25 lb tin	
pails, add to keg price.	@ 1/2
Lead, white, in oil, 12 1/2 lb tin	
pails, add to keg price.	@ 1
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.	@ 1 1/2
Lead, White, Dry in bbls.	5 1/2 @ 6
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.	@ 6
Lots less than 500 lb.	@ 6 1/2

Oils—

Linseed, City, raw.	65¢ @ 66
Linseed, City, boiled.	67¢ @ 68
Linseed, State and West'n, raw.	65¢ @ 66

Spirits Turpentine—

In Southern bbls.	37 1/2 @ 38
In machine bbls.	38 @ 38 1/2

Putty—

In bulk.	\$1.25
In bladders.	2.25
In cans 12 lb to 25 lb.	2.25
In cans 1 lb to 5 lb.	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.	12 1/2 @ 13
Kerosene.	13 @ 13 1/2

Pipe, Drain—

40%

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.	60¢ @ 60 1/2
White Japanned.	60¢ @ 60 1/2
Nickel Plated.	60¢ @ 60 1/2
Bronze Finishes in Imitation of Gold.	
Silver, Copper or Bronze.	60¢ @ 60 1/2
Electroplated in Brass, Bronze or	
Copper.	60¢ @ 60 1/2
White Porcelain.	60¢
Solid Brass and Bronze Metal.	50¢

Roofing Material—

1 Ply Tarred Paper.	26 00 @ 27.00
2 Ply Tarred Paper.	roll, 108 sq. ft.
3 Ply Tarred Paper.	roll, 108 sq. ft.
Slater's Felt.	roll 500 sq. ft., 50¢ @ 60¢
Roofing Pitch.	bbl. \$2 35

Rosin—

Common and Good—Strained.	
Rosin, C. & D.	bbl. \$1.40 @ \$1.42
Rosin, E. & F.	bbl. 1.55 @ 1.05
Rosin, G. & H.	bbl. 1.70 @ 1.75
Rosin, I. & K.	bbl. 1.80 @ 2.15
Rosin, M. & N.	bbl. 2.60 @ 3.15

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

According to size.	
Pennsylvania:	
Best Bangor.	\$3.25 @ \$1.50
No. 1 Bangor Ribbon.	\$3.00 @ 3.50
Pen Argyle.	\$3.00 @ 3.75
Peach Bottom.	\$4.85 @ 5.60
No. 1 Boys.	\$3.35 @ 3.55
No. 1 Chapman Keystone.	3.25 @ 4.25
Vermont:	
Sea Green.	\$2.00 @ \$3.15
Purple.	3.75 @ 4.25
Unfading Green.	3.25 @ 4.50
Red.	0.50 @ 1.00
Maine:	
Brownville, Unfading Black:	
No. 1 quality.	\$5.25 @ 7.50
No. 2 quality.	\$4.25 @ 6.00

Solder—

1/2 & 3/4 guaranteed.	18 @ 18 1/2
No. 1.	14 @ 16 1/2
Prices of Solder indicated by private	
brands vary according to composition.	

Soldering Fluids—

Concentrated Flux.	4c
Eureka Flux:	
Triple Strength.	3c
Extra Concentrated.	4 1/2c
Crystal.	7c
Gedney's Fluid.	2c
Lennox Fluid.	2c
Perfection Flux.	3c
Yager's Salts, 1 lb. bottles.	each, 60¢
5 lb. bottles, per lb., 40¢	

Soldering Coppers—

Per lb. 22¢ @ 24¢

Spelter—

Western Spelter. 4.45 @ 4 1/2

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanize 1. 50%

Tin Plugs and Bars—

Banca. plugs.	25 1/2 @ 27 1/2
Straits, plugs.	25 1/2 @ 26 1/2
Straits, in bars.	27 1/2 @ 27 1/2

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:	
IC.	14 x 20. \$7.75
IX.	14 x 20. 8.25
IXX.	14 x 20. 10.50
IXXX.	14 x 20. 11.75
IXXXX.	14 x 20. 13.00

Melyn Grade:	
IC.	14 x 20. 7.25
IX.	14 x 20. 8.75
IXX.	14 x 20. 10.00
IXXX.	14 x 20. 11.25
IXXXX.	14 x 20. 12.50

Alway Grade:	
IC.	14 x 20. 6.75
IX.	14 x 20. 7.85
IXX.	14 x 20. 8.95
IXXX.	14 x 20. 10.05
IXXXX.	14 x 20. 11.15

Coke Plates, Bright—

Bessemer Steel, or equal to J. C.	14 x 20. \$6.75 @ 6.90
B. Grade, full weight	
IX.	14 x 20. \$7.25 @ 7.50

N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

100 lb.	15¢
95 lb.	20¢
90 lb.	25¢
85 lb.	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.	\$17.50 @ 18.00
About 80 lb coating.	16.75 @ 17.25
About 20 lb coating.	14.75 @ 15.25
About 15 lb coating.	12.75 @ 13.25
About 8 lb coating.	12.00 @ 12.50

Boiler Plates, American—

IXX, 14 x 26. (112 sheets)	\$14.00
IXX, 14 x 28. (112 sheets)	17.00
IXX, 14 x 31. (112 sheets)	18.50

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.	\$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, per doz.	18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896.	30¢ @ 35%
Copper and Bronze, 3¢ per lb. list more than B. as.	
Seamless Brass Tubes, net list Feb. 8, 1899.	
Tin.	50%
Galvanized.	50%
Fittings for do.	40%

Zinc—

600 lb casks per lb.	6 1/2¢
Per lb.	7 1/4¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.	65¢ @ 70%
35 and 40 gal.	65¢ @ 70%
Other sizes up to 52 gal.	60¢ @ 60 1/2
52 gal. and above.	60¢ @ 60 1/2
Extra Heavy Boilers:	
18 to 52 gal.	50¢ @ 60%
53 gal. and above.	50¢ @ 55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks.	65¢ @ 65 1/2
Bath Cocks and Double Bath Cocks.	65¢ @ 70%
Bibs.	65¢ @ 70%
Bibs, Flanged.	65¢ @ 70%
Fuller:	
Bibs.	70¢ @ 70 1/2
Basin Cocks Nos. 1 to 4.	70¢ @ 10 1/2
Bath Cocks, No. 4.	\$2.00 net
Ground Key Work:	
Finished Bibs.	60¢ @ 65%
Rough Bibs and Stops.	65¢ @ 70%
Rough Stop and Stop and Waste	
Cocks.	70¢ @ 70 1/2
Rough Stop and Stop and Waste	
Cocks, Patented.	65¢ @ 65 1/2

Miscellaneous—

Basin Clamps.	60¢ @ 65%
Basin Plugs.	60¢ @ 65%
Chain Stays.	60¢ @ 70%
Iron Boiler Couplings:	
Lead Pipe.	Iron Pipe.
Platn Facs.	set \$0.95
Ground Face.	set \$1.05
Sink or Bath and Wash Tray Plugs.	60¢ @ 65%
Soldering Nipples.	70¢ @ 75%
Soldering Unions.	70¢ @ 75%
Union Elbows, Hot Water Heating.	70¢ @ 75%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air	70¢ @ 70 1/2
Gas Meter and Union Meter.	65¢ @ 70%
Steam.	65¢ @ 70%

Iron—

All Iron.	70¢ @ 70 1/2
Iron with Brass Plugs.	65¢ @ 70%

Valves—

Brass

ALPHABETICAL LIST OF ADVERTISERS.

Adler H. Co..... 11	Colwell Lead Co..... 39	Gurney Heater Mfg. Co..... 19	Miner & Peck Mfg. Co..... 40	Schratwiesers Metal Lath
American Radiator Co..... 6	Connors, Wm. Paint Mfg. Co. 73	Hamlin, G. R..... 75	Montross Metal Shingle Co... 83	Works..... 84
American Sheet Steel Co...1&80	Cooney & Geiger..... 77	Hanson & Van Winkle Co.... 38	Morgan & Co..... 39	Schwab, R. J. & Sons Co..... 15
American Tin Plate Co..... 80	Co-operative Foundry Co...16&17	Harrington & King Perfo-	Mueller, L. J. F'ce Co..... 24	Schwerdtle Stamp Co..... 75
Arcade Mfg. Co..... 38	Cope, Geo. W..... 34	rating Co..... 69	Munsell, E. & Co..... 34	Seavey Mfg. Co..... 31
Armstrong Mfg. Co..... 40	Cortright Metal Roofing Co... 84	Hart & Crouse Co..... 22	National Enameling & Stamp-	Sbeppard, Isaac A. & Co..... 1
Artistic Enameling Wks.... 11	Crosby Steam Gage & Valve	Hessler, H. E. Co..... 37	ing Co..... 42	Silver & Co..... 74
Asphalt Ready Roofing Co... 81	Co..... 1	Hoffman, Geo. W..... 35	National Pipe Bending Co.... 28	Smith, H. B. Co..... 25
Asheville Mica Co..... 84	Curtis & Curtis Co..... 40	Howard Thermostat Co..... 15	Newton, Win. M..... 1	Smith & Anthony Co..... 83
Atlas Radiator Pedestal Co.. 31	Dangler Stove & Mfg. Co..... 29	Howes, S. M. Co.... 18, 34, 35&38	New York Iron Roofing &	Smith & Thayer Co..... 30
Auld & Conger..... 75	Detroit Stove Works..... 14	Howson & Howson..... 74	Corrugating Co..... 79	Special Notices..... 73
Ayling Bros..... 32	Dighton Furnace Co..... 24	Hungerford, U. T., Brass &	New York Trade School..... 73	Sperry, D. R. & Co..... 74
Barstow Stove Co..... 88	Dixon, Jos. Crucible Co..... 33	Copper Co..... 87	Niagara Machine & Tool Wks. 85	Stamford Foundry Co..... 27
Beckwith, P. D., Est. of..... 2	Donaldson, O. G. & D. H.... 35	Independent Register Co.... 31	Noyes & Nutter Mfg. Co..... 32	Stanton Heater Co..... 22
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Boydton Furnace Co..... 6	Energy Elevator Co..... 39	Keene, Geo. C. & Co..... 87	Peck, Stow & Wilcox Co.... 85	Trimont Mfg. Co..... 39
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Brauer, A. G..... 35	Enterprise Stove Co..... 11	Kemp, C. M. Mfg. Co..... 41	Perkins, J. L. & Co..... 37	Tubular Heating & Ventl-
Bray, J. & Co..... 75	Esterbrook's, R. Sons..... 41	Kewanee Boiler Co..... 26	Pfiffa, Machine Tool Co..... 85	lating Co..... 18
Bridgeport Crucible Co..... 37	Excelsior Stove Mfg. Co.... 14	Kieley & Mueller..... 1	Pierce, Butler & Pierce Mfg.	Union Stove Repair Co..... 35
Brien Heater Co..... 27	Fenn, Geo. E..... 77	Klauer Mfg. Co..... 77	Co..... 32	Utica Heater Co..... 23
Brobard Co..... 33	Floyd, Wells & Co..... 26	Koven, L. O. & Bro..... 38	Pittsburgh Stove & Range Co. 8	Valentine, M. D. & Bro. Co... 37
Brooklyn Metal Ceiling Co... 78	Follansbee Bros. Co..... 1	Kramer Bros..... 76	Pocock, Oliver..... 85	Vance Boiler Works..... 32
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Chamber of Commerce.... 76	Garry Iron & Steel Co..... 78	McSherry, Chas..... 84	Rochester Radiator Co..... 30	Weir Stove Co..... 88
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Cheney, S. & Son..... 1	Genuine Bangor Slate Co.... 75	Magoon, A. J. & Son..... 34	Sackman, F. A..... 74	Wheeler, W. A..... 85
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Clayton & Lambert Mfg. Co.. 39	Gummey, McFarland & Co... 79	Michigan Stove Co..... 4&5	Saunders', D. Sons..... 40	Young, Jos. H..... 39
Clough, R. M..... 87	Gurney & Co..... 26	Millar, Chas. & Son Co..... 88	Schaffer, John P..... 32	Zero Valve & Brass Mfg. Co.. 41
		Miller, Wm. Range & Furnace	Schill Bros. Co..... 26	Zucker & Levett & Loeb Co.. 39
		Co..... 7	Schneider & Trenkamp Co... 12	

PERFORATED METALS

STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals
PERFORATED AS REQUIRED for

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- Water Fronts.**
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N. Y.
- Water Heaters.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 69.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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HELP WANTED.

A first-class SALESMAN who has an acquaintance with stove trade in New York City, New Jersey and Connecticut. "New York," care *The Metal Worker*, New York. Oct. 12

First-class TINSMITH; must be good furnace workman. O'Toole Bros., Clinton, Mass. Oct. 12

First-class TINNERS, CORNICE MAKERS and SHEET METAL WORKERS; give references, experience and wages expected. Write to St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn. Oct. 12

MOLDERS wanted; steady work for good floor and bench molders on stove plate and other light work; new modern shop. Apply to A. J. Lindemann & Hoverson Company, 348 Florida street, Milwaukee, Wis. Oct. 12

A STOVE SALESMAN with an acquaintance among the building and contracting trade of New York and vicinity. "Regal," care *The Metal Worker*, New York. Oct. 12

BOOKKEEPER and GOOD FIGURER in cornice business. "Cornice Maker," care *The Metal Worker*, New York. Oct. 12

A first-class STOVE SALESMAN; must be experienced. Apply by letter with full information and references, Rathbone, Sard & Co., Aurora, Ill. Oct. 12

A first-class PLUMBER and STEAM FITTER; one who can do good work; must be sober and able to handle his work; will give a steady position by the year, nine hours per day, to a man who will suit. Charles O. Murphy, 259 Central avenue, Norwich, Conn. Oct. 12

Plumbing supply house desires the services of a competent young man to check invoices and be generally useful in office. Address in own handwriting, stating age, experience, references and salary expected. "Lavatory," care *The Metal Worker*, New York. Oct. 12

TINNER, PLUMBER and all around man; one who has had experience in store; only sober and reliable man wanted. F. E. Kinsman, Westfield, Pa. Oct. 12

A good all around man who understands and can do TINNING, PLUMBING and STEAM HEATING; must be strictly honest and sober and able to help in store at times; steady job and good wages to right man; none but experienced men need apply; answer with references, Louis Stanton, Frostburg, Md. Oct. 12

SALESMAN: one thoroughly acquainted with gas, gasoline stoves and furnace trade; state past experience, present employment and salary expected. Shelby Stove & Mfg. Company, Shelby, Ohio. Oct. 12

At once, PLUMBER that can do good job, also help at tinning; give reference, ability, age, nationality and wages wanted. J. V. Chryst, Morrison, Ill. Oct. 12

A STEEL RANGE WORKER; competent and reliable. Enterprise Stove Company, Vincennes, Ind. Oct. 12

At once, two good TINNERS; all around jobbing, furnace work, &c.; steady work; state wages and experience. I. W. Bennett & Son, Gananoque, Ontario, Canada. Oct. 12

STOVE PLATE PATTERN MAKER. STEAM and HOT WATER MOLDERS and STOVE PLATE MOLDERS. Rossmore Company, Peekskill, N. Y. Oct. 12

A situation is open for a first-class galvanizer and tinner, competent to act as ASSISTANT FOREMAN and in the absence of the foreman to take full charge of the plant; applicant must understand tinning cast iron and be able to turn out job galvanizing rapidly and of the very best workmanship; no intemperate man or one that considers the business a secret and himself the only possessor need apply; state experience and wages wanted, which must be reasonable. Address for two weeks C. V. Henderson, care *The Metal Worker*, New York. Oct. 12

At once, a first-class general man; one who can do plumbing, steam and hot water heating. W. R. Walker, Torrington, Conn. Oct. 12

At once, two TINNERS; steady work; state age and wages expected. James Fitzgibbon, Red Bank, N. J. Oct. 12

SLATERS at once; steady work for reliable men; write or come at once. A. C. Hathorne, Burlington, Vt. Oct. 12

A good, sober and industrious TINSMITH and PLUMBER who is used to general jobbing as comes to a country shop; one who can do furnace work; give age, references and wages expected. Sargent & Fulton, Sunapee, N. H. Oct. 12

At once, good TINSMITHS. Address Lock Box 107, Rondout, N. Y. Oct. 12

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As CUTTER and FOREMAN in sheet metal department for a steam heating concern; one capable of estimating preferred; permanent place. "Steam Heating," care *The Metal Worker*, New York. Oct. 5

Two all around TINNERS, with some knowledge of furnace work, wanted at once; steady work; state wages expected and if can come at once. Greensburg Hardware & Supply Company, Greensburg, Pa. Oct. 5

A first-class man to work on greenhouse pipes; neat joints. James J. Lynch & Co., 11 Mill street, Newport, R. I. Oct. 5

At once, a good sober, strictly first-class TINNER; one capable of doing inside and outside tin and galvanized iron work; must be experienced in cornice and furnace work; good wages to the right man. Knapp Hardware Company, Mason City, Iowa. Oct. 5

A factory FOREMAN for refrigerator plant; a good man with original ideas to take charge of the department; only steady and reliable man need apply. Box 150, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Oct. 5

A PLUMBER and STEAM FITTER; reliable and sober; a recent graduate of New York or equal trade school desirable. "N.," East Hampton, N. Y. Oct. 5

A good general jobber in plumbing, tinning, &c.; steady job to a good mechanic; wages, 25 cents per hour. Apply immediately to Mable & Son, 46 Water street, Newburgh, N. Y. Oct. 5

TWO PLUMBERS; \$2.50 a day. Holles & O'Donnell, Cranford, N. J. Oct. 5

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At once, a good all round TINSMITH and METAL WORKER; one who understands furnace work, roofing, plumbing, and work generally done in a country shop; state age and wages expected. Callanan Bros., Keeseville, N. Y. Oct. 5

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A man with sufficient experience in the stove business to assume the management of the sales department of a reputable manufacturing establishment; state present employment, character and duration of past experience and general fitness to fill position indicated. Communicate with "Experience, 928," care *The Metal Worker*, New York. Sept. 28

A competent man to take general supervision of the manufacturing departments of a well established stove foundry; state past experience, present employment and qualifications for position. "Foundryman," care *The Metal Worker*, New York. Sept. 28

SITUATIONS WANTED.

TINSMITH; 25 years' experience, tin, brass or copper work. S. Golomb, 3 Goerck street, New York. Oct. 12

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By a first-class TINNER and SHEET METAL WORKER as bench man in tin shop or factory; can construct all kinds of hot air furnace work or manufacture specialties; can furnish references. P. O. Box 37, Webster, N. Y. Oct. 12

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By an experienced STOVE PATTERN CARVER and DESIGNER of well-known ability, steady position. "Carver," care *The Metal Worker*, New York. Oct. 12

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A STOVE PATTERN MAKER with 25 years' experience; able to carve and design the latest style of ornamentation and competent to get up new work and understand the construction of stove patterns in all its details, desires position in stove works. A. E. Gebhardt, 426 Fourth avenue, N. E., L. Troy, N. Y. Oct. 5

As FOREMAN in cornice and skylight works. "G. H. W.," care *The Metal Worker*, New York. Sept. 28

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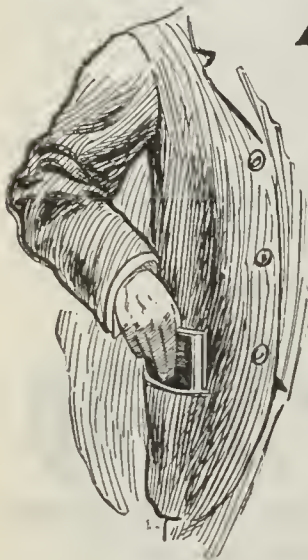
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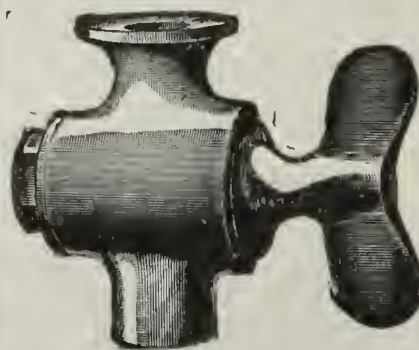
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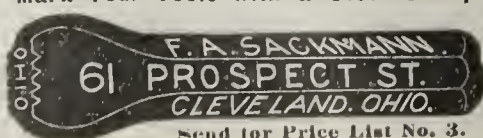
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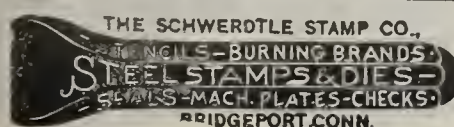
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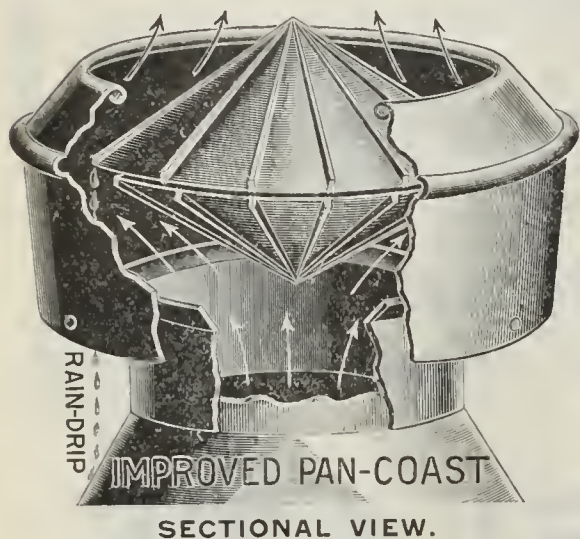
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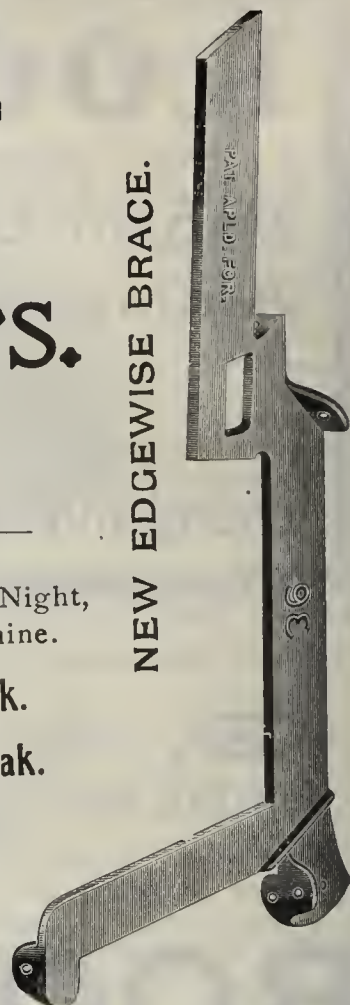
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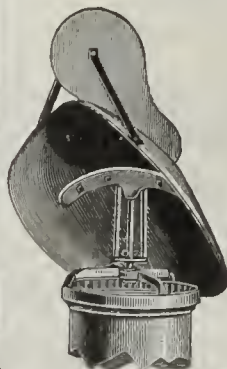
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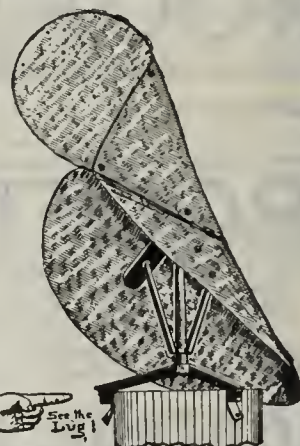
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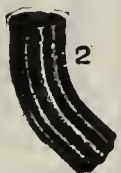
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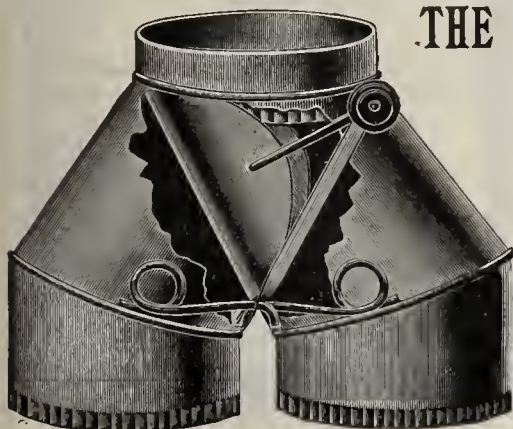
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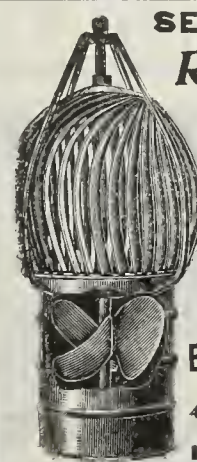
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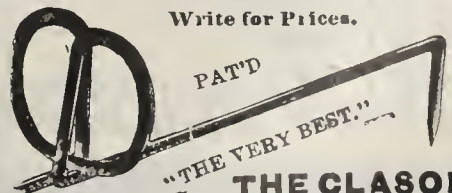
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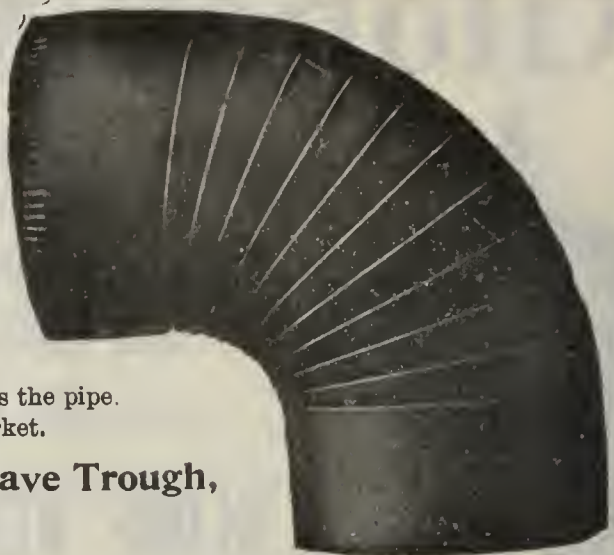
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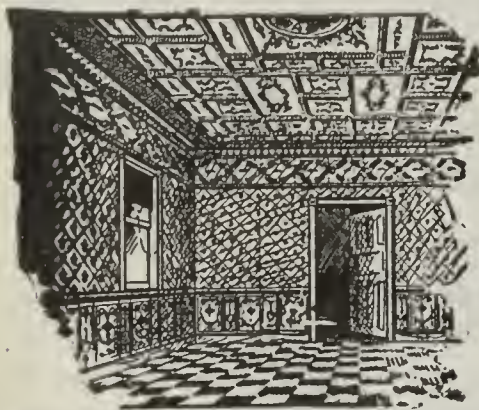
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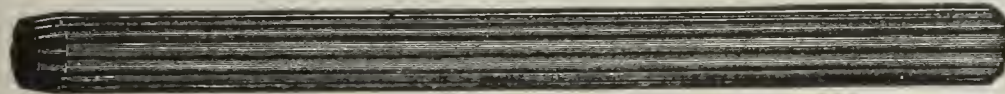
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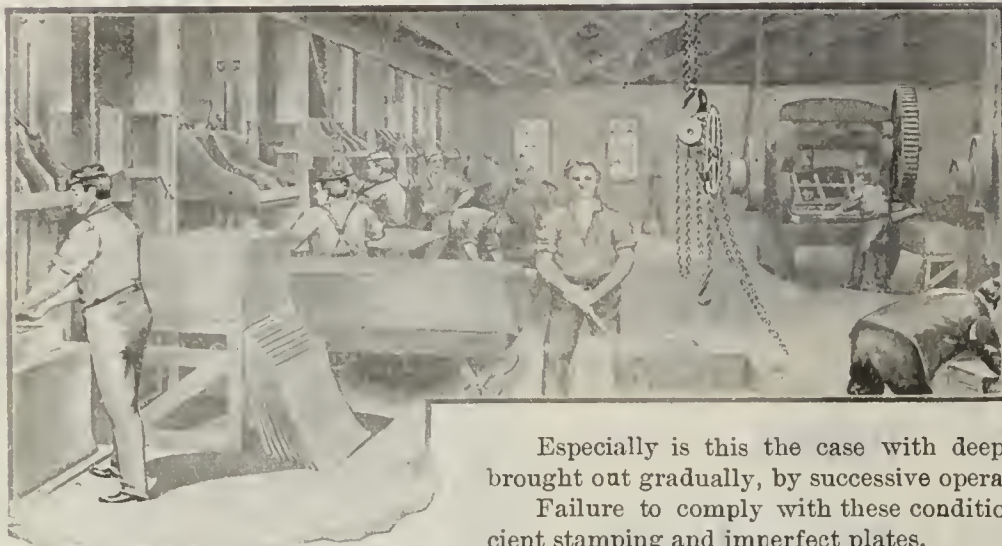
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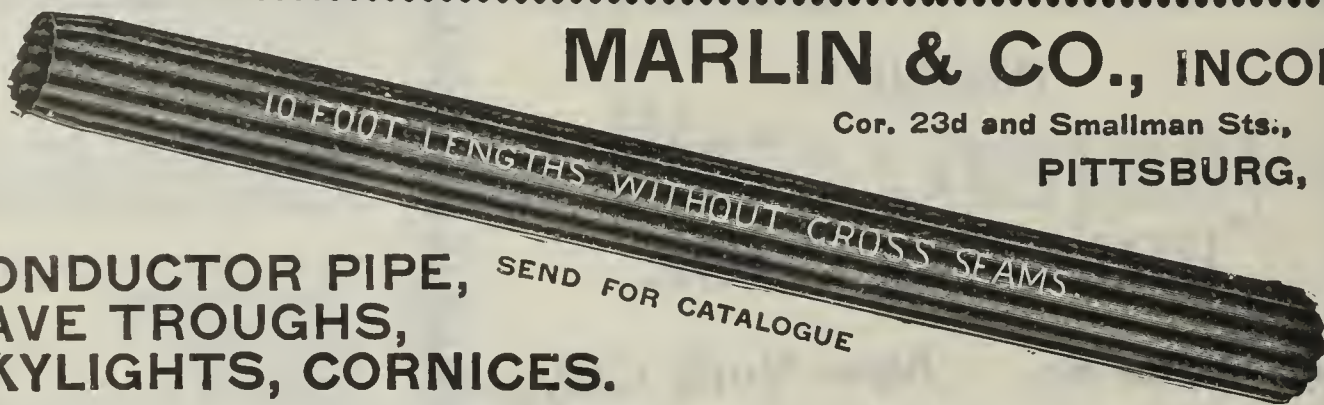
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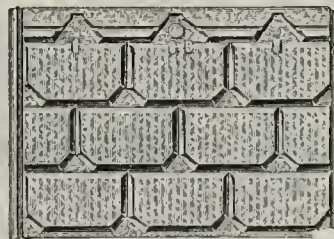
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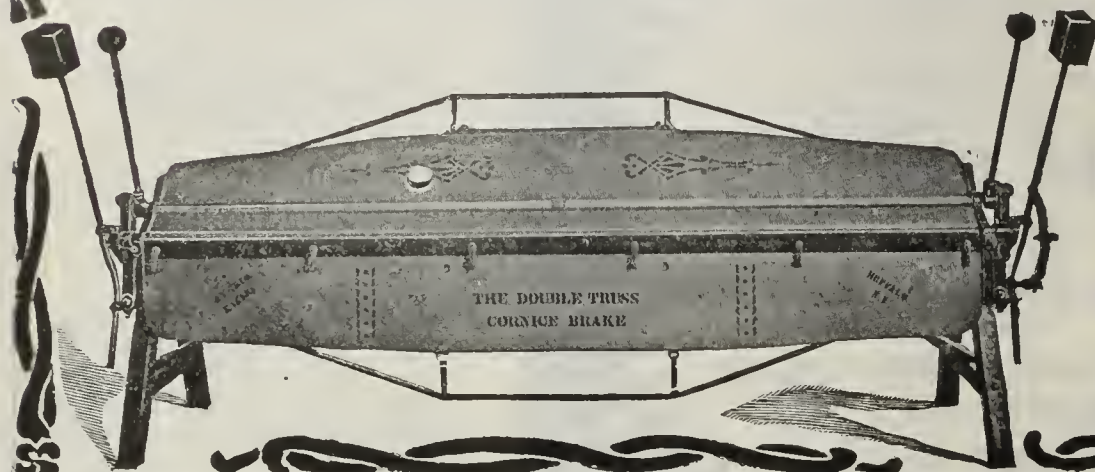
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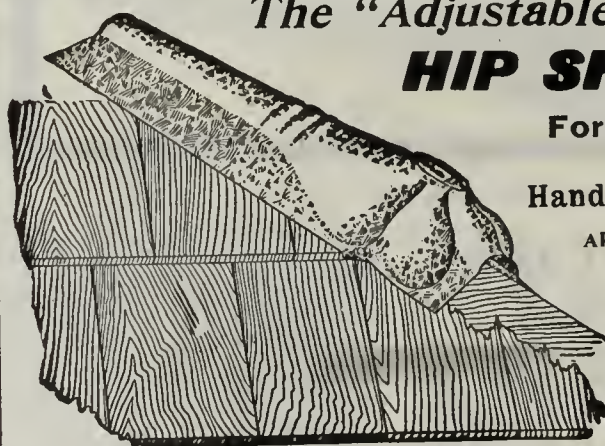
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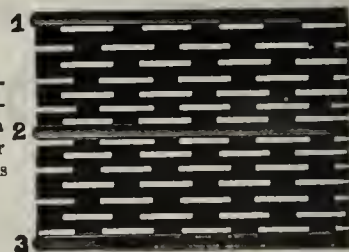
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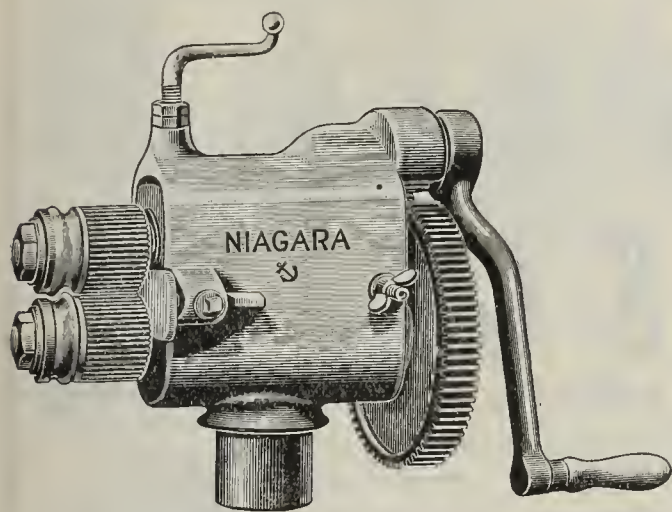
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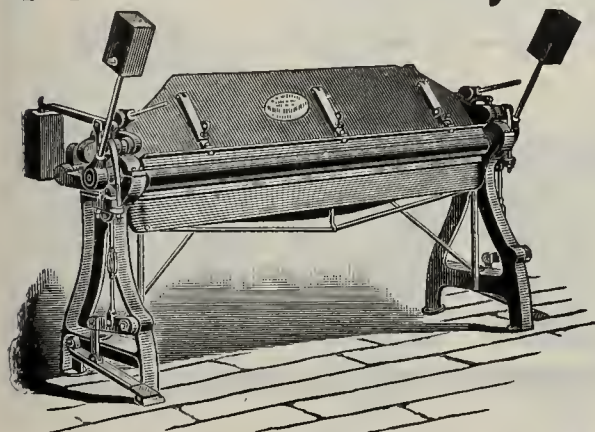
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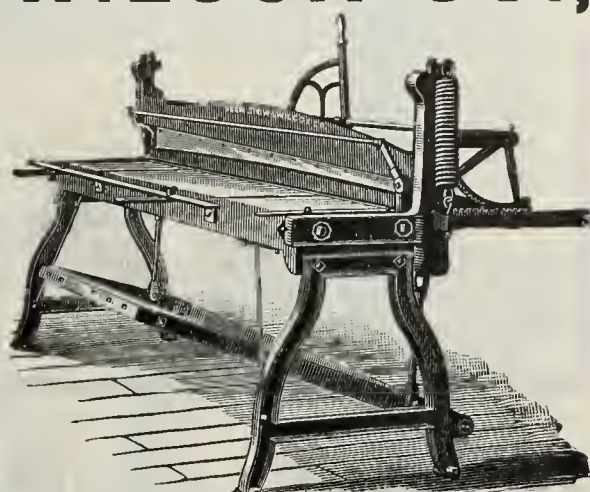
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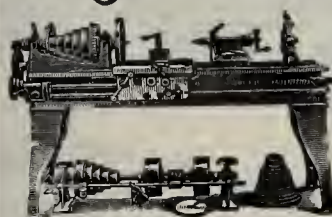
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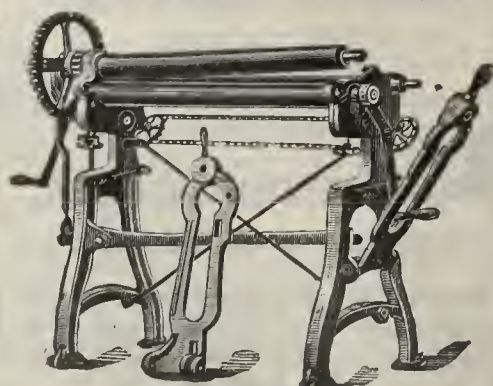
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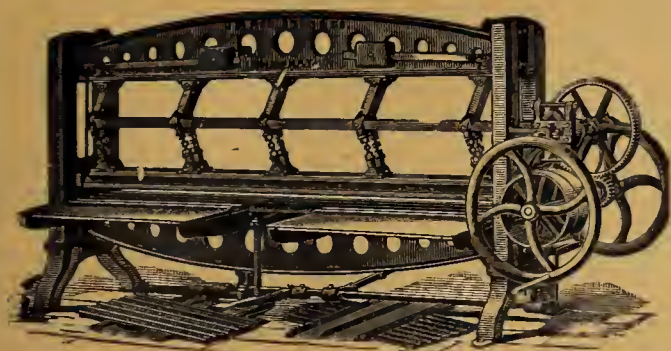
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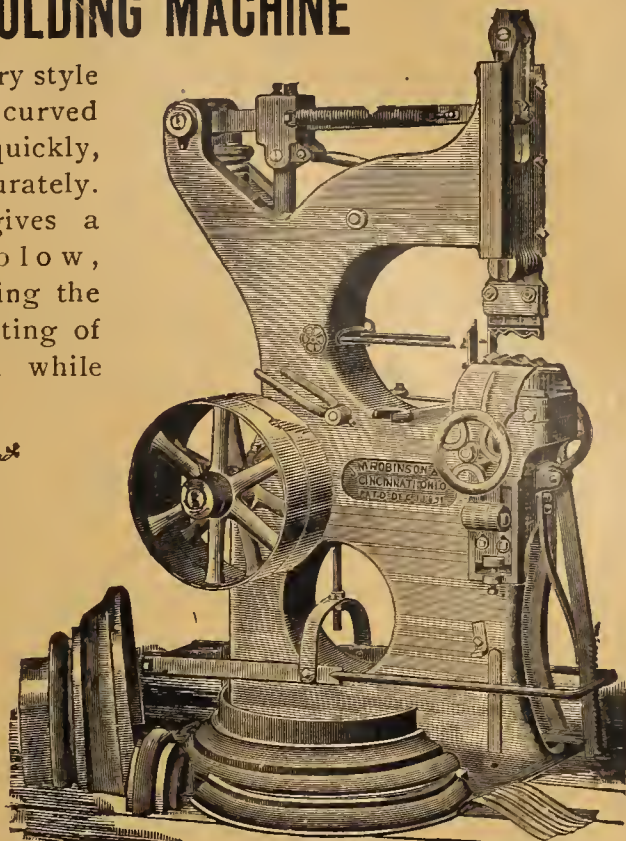
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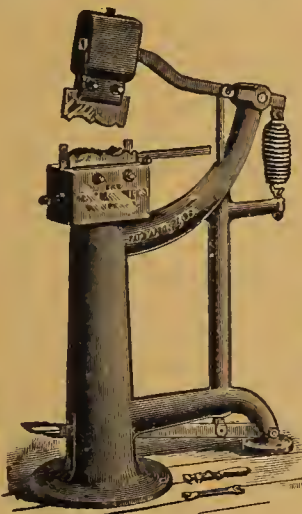
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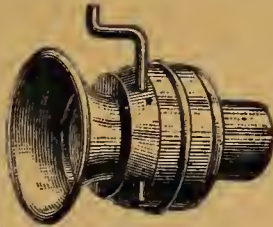
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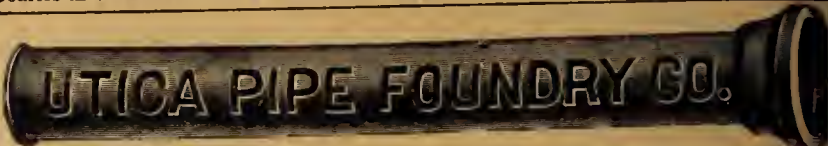
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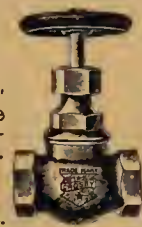
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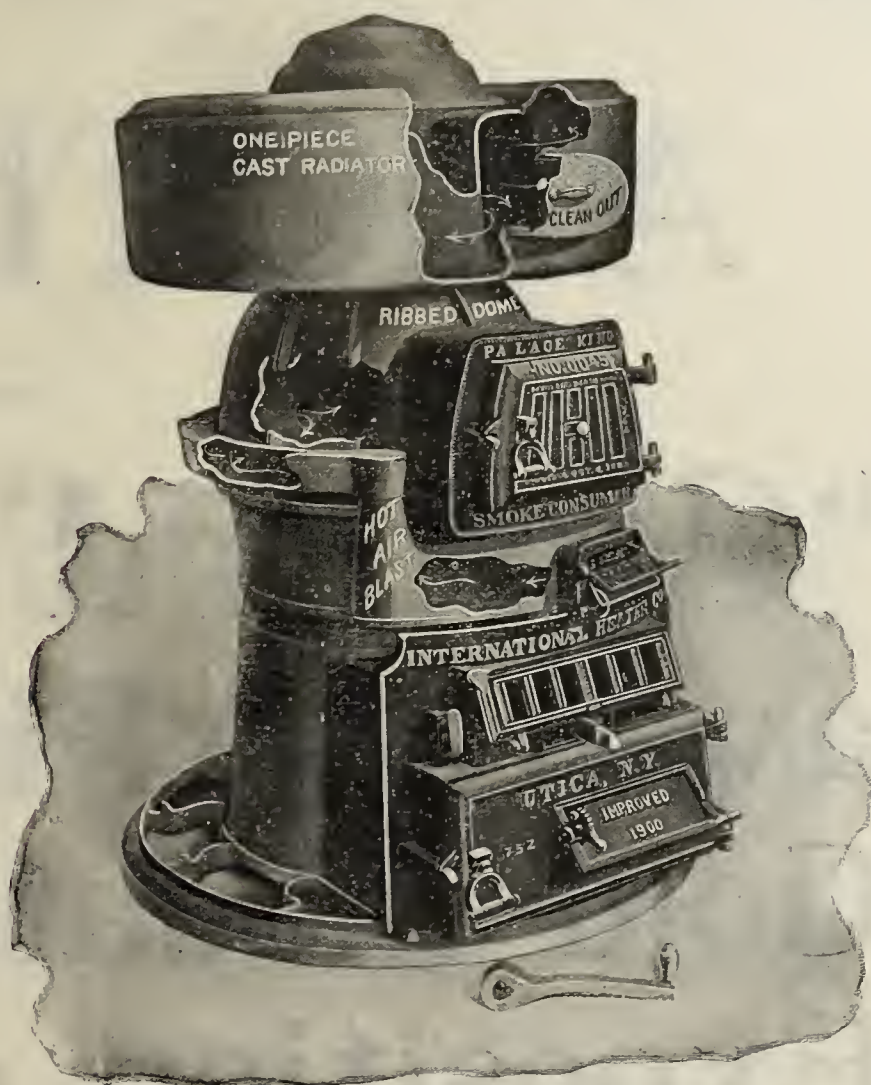
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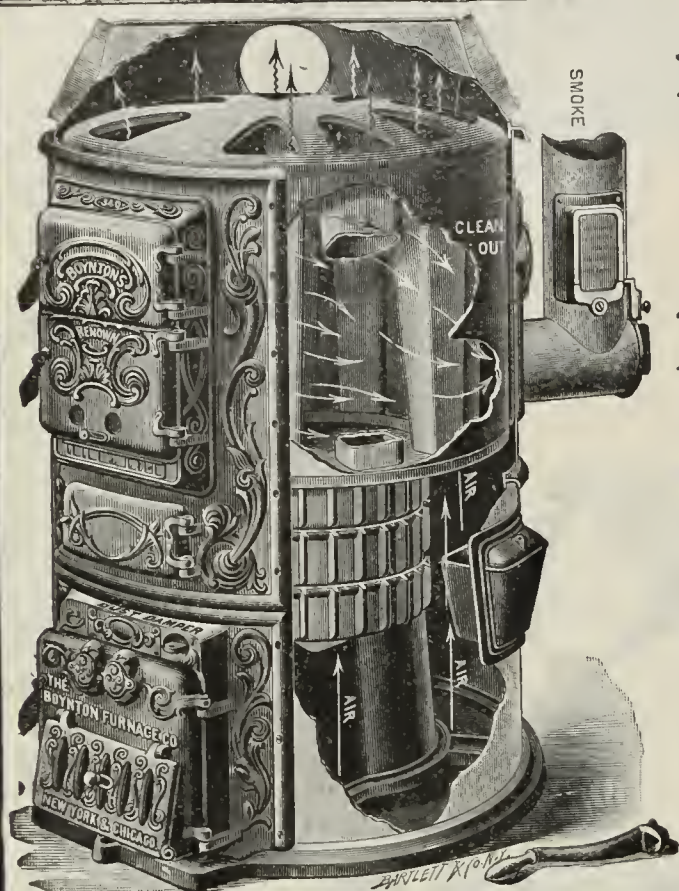
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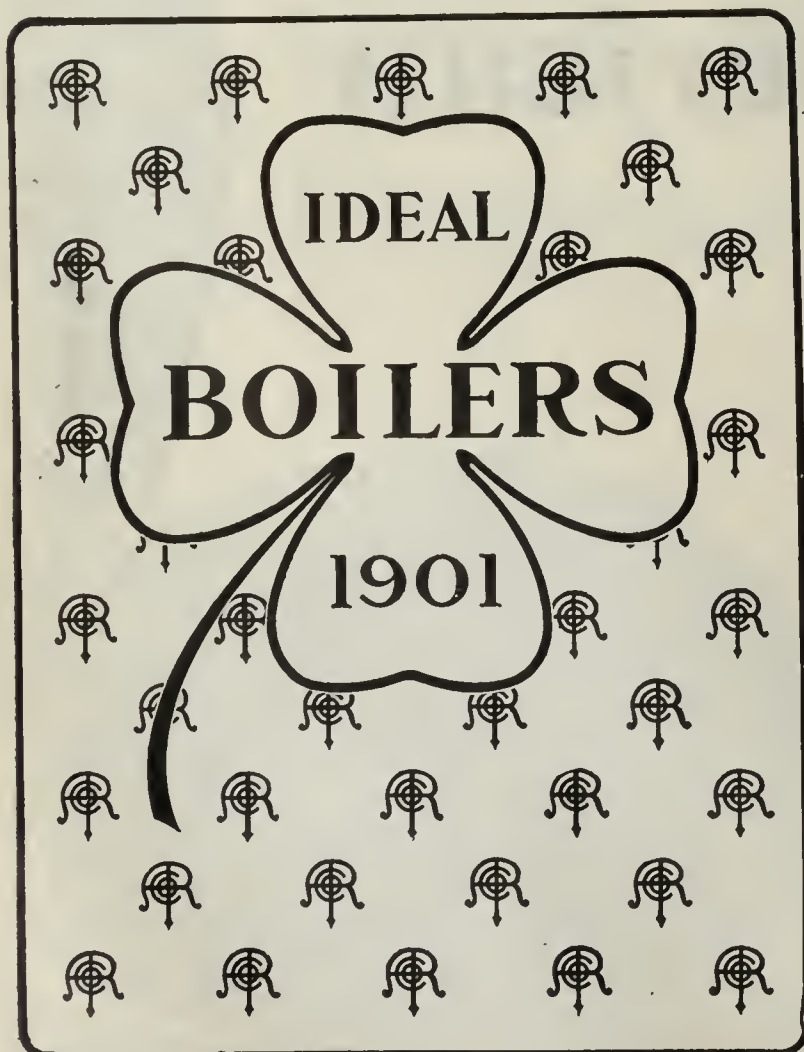
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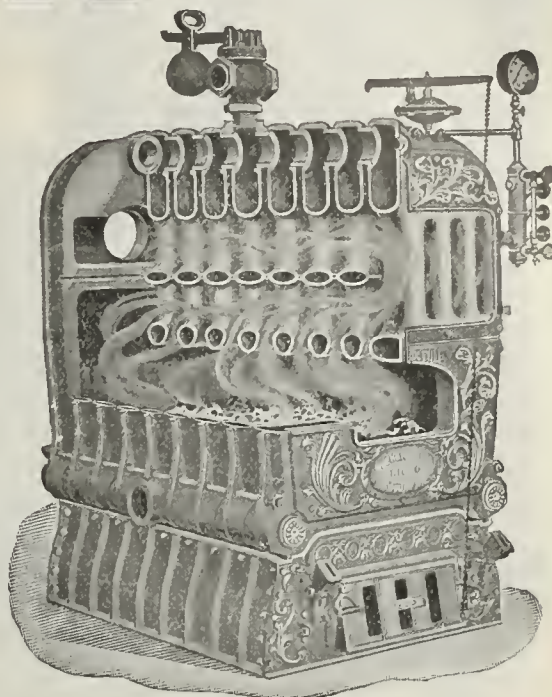
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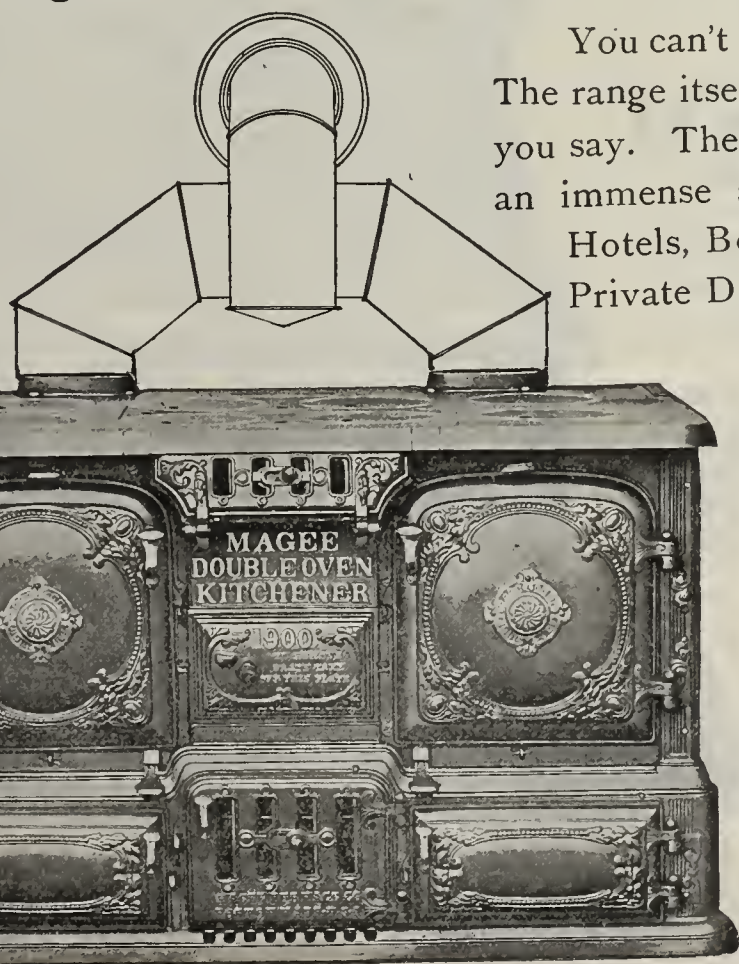


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LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

... THE ...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.





Moore's QUICK OVEN **Stoves**



HUSTLES HIM TO WASH HIS FACE

Mr. B. J. Norby of Cassville, Mo., writes as follows:

"One of the Steel Stoves recently ordered was for Editor Charles Ray. He is very much pleased with it. Mrs. Ray thinks that there is no other worth having. She says it bakes so quickly that her husband hardly has time to wash his face before breakfast is ready."

The kind of satisfaction shown in this letter is the kind that counts big for future business. It reaches the neighbors and friends, and in the end makes many sales.

MOORE'S QUICK OVEN STEEL STOVES give this kind of satisfaction in abundance. That's what makes them

"The Easy Line to Sell."

Joliet Stove Works, Joliet, Illinois

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.



1902

"RELIABLE"

STOVES and RANGES

represent the highest type of perfection in stove construction. They are far superior to all others in points of style, finish, durability and economy in the use of fuel.

"RELIABLE" STEEL RANGE BODIES are made of Wood's best blued polished steel, thoroughly lined with sheet asbestos and steel plate. Bottom oven plate is protected with two thicknesses of asbestos and three thicknesses of steel; also a two inch dead air space. This construction insures economy of fuel.

Our removable duplex grate is the best and our sectional fire pot is a proven success.

Our **"RELIABLE" OIL HEATERS** are too well known to necessitate our setting forth their many advantages over others. Suffice it to say they bear the name "RELIABLE."

Twenty-three years of continued success in stove making and the past reputation of the "RELIABLE" is our best guarantee for the future. They have given universal satisfaction to thousands in the past, and will to you.

This Is The Line That Never Disappoints.

Keep your eye open for our **1902** line of **Gas** and **Vapor** cooking and heating appliances. We have some rare surprises in store for you later on.

SEND FOR 1902 CATALOGUES.

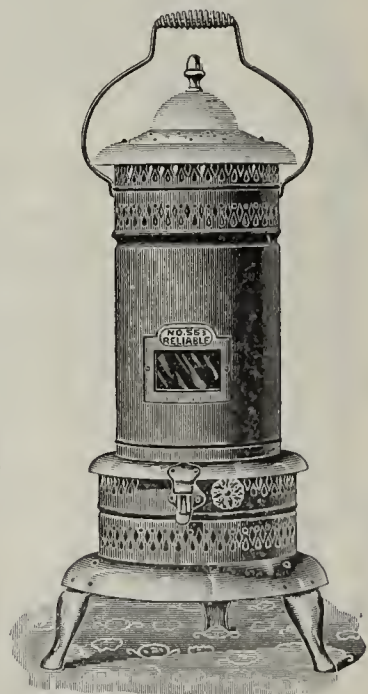
MADE BY

The Schneider & Trenkamp Company,

CLEVELAND,

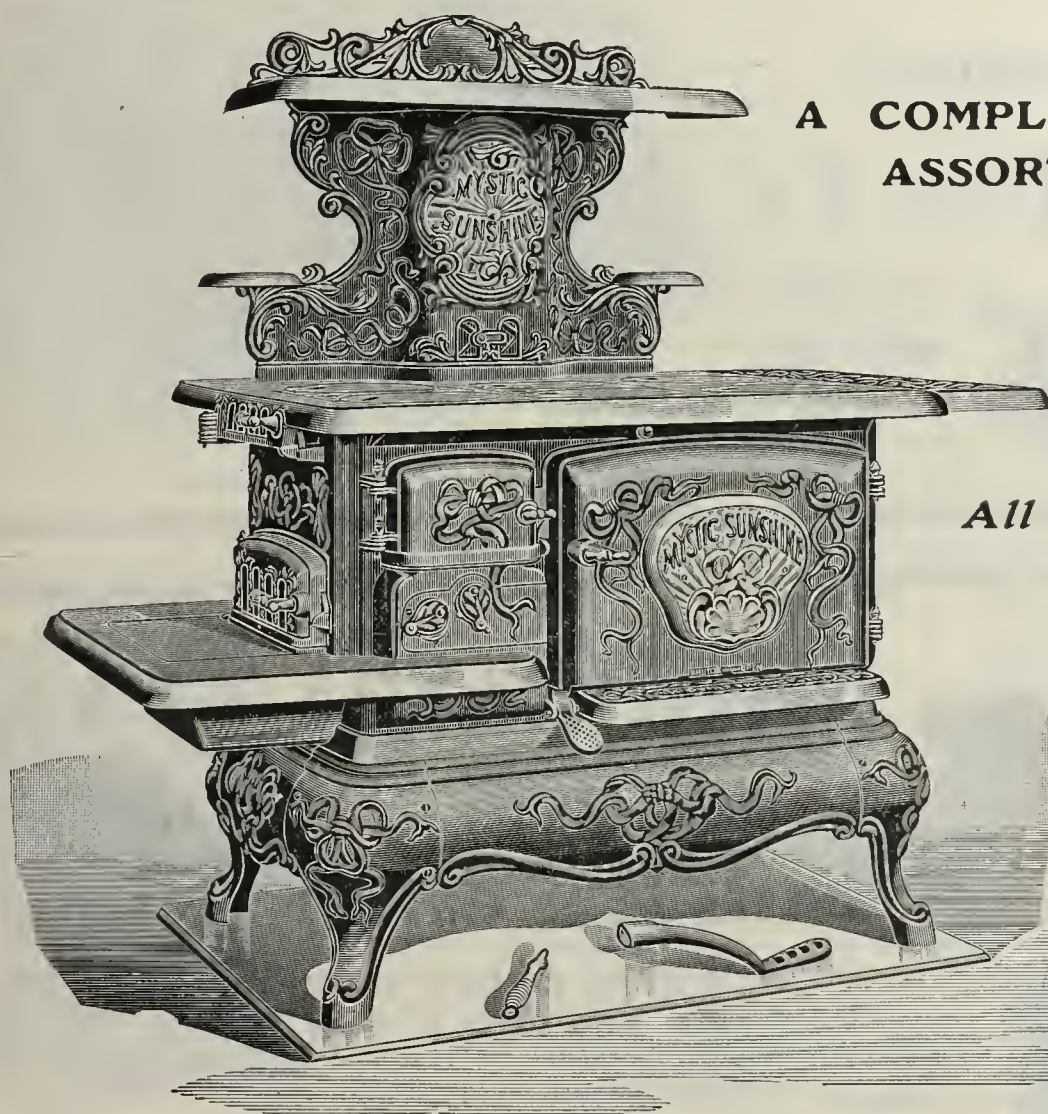
CHICAGO,

SAN FRANCISCO.



*Comparison is Useless when
Considering the* ♪ ♪ ♪

MYSTIC Sunshine Range



A COMPLETE
ASSORTMENT IN
ONE DESIGN

*All Styles
All Sizes*

Every dealer
who handles
the Mystic
Sunshine
has a
specialty

Made at the famous
SUNSHINE STOVE SHOP

**The Reading Stove Works
Orr, Painter & Co.**

Main Office and Foundries, . READING, PA.

PHILA.
64-66 N. 2nd St.

CHICAGO
153-159 S. Jefferson St.

BOSTON
86-90 Canal St.

BUFFALO
411 William St.



Model Oak

Entirely New Line for 1901.

We use the old name, but the numbers are different.

The Round Air Tight Register is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion through the opening.

The register construction is such that the **Grate Handle** can be pulled out through the register opening.

The Extension on Top of the Fire Pot extends up inside of the steel drum and is cast solid with the fire pot so it cannot twist and warp.

The Sectional Ring fits over the flange turned out on the bottom of the steel drum.

The Ash Pan fits tightly all around the edges of the ash pit.

The joints remain tight.

The price is just right.

Ask for more information.

The Portsmouth Stove & Range Co.,



Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan
and the Northwest.



MODEL OAK.

ENTIRELY NEW.

HIGHLAND OAK

DOUBLE HEATER AND CIRCULATOR.

Full Revertible Flue.

A Stove without a Competitor.
For Any Kind of Fuel.

ECONOMICAL.....

.....EFFICIENT

Fifty per cent. more heat from a given amount of fuel than any other heater its size.

EFFECTIVE DUST FLUE AND DAMPER.

FIRE POT HEAVY AND DURABLE.

CONVENIENT CLEAN OUT IN ASH PIT.

WITH OR WITHOUT MAGAZINE.

PLAIN OR DUPLEX GRATE.

HIGHLAND OAKS are constructed in the most modern and popular style, outclassing all others in important features, both as to structure and external appearance.

[APPLY FOR THE HIGHLAND OAK AGENCY AT ONCE AND THEREBY CONTROL THE BEST SALES.

WRITE US FOR CATALOGUE AND FULL PARTICULARS.

BUCKWALTER STOVE CO.,

Box 10, ROYERSFORD, PA.





CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES

CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES,
IND.

DEALERS, BUILDERS AND OWNERS

Should secure our Line of Goods. They
will then have the Best on the Market.

The **Columbian Banner, Comet, Prince and
Climax Furnaces, and the Columbian Peer-
less, Victor, Newport, Star and Triumph
Ranges** are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder
Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

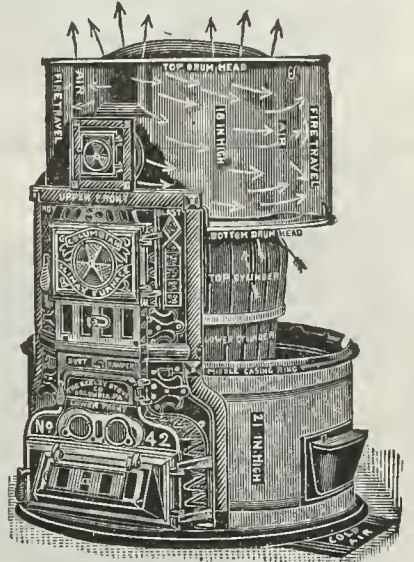
THE KEELEY STOVE CO.,

COLUMBIA, PA.



COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



Artistic
Enameled

Steel
Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse *Artistic Enameled Steel Ranges* with the ordinary black
baked Japan used on other ranges.

The "ARTISTIC" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical; the best steel range.

SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

**GAS STOVES
& BURNERS**

**HADLER
CO.
PITTSBURG
PA.**



**WRITE FOR
CATALOGUE
NO 34**

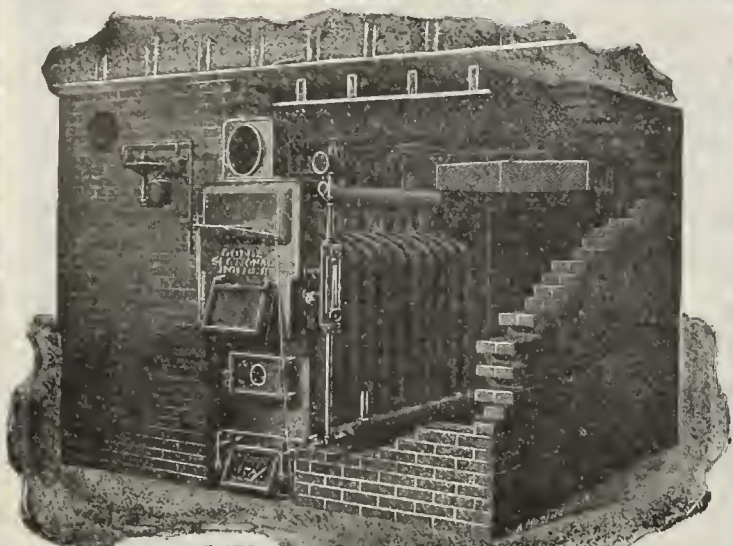
**THE MOST
COMPLETE LINE
FOR ALL GASES**

THE H.B. SMITH CO.

WESTFIELD,
MASS.

EUROPEAN
AGENT,
AUG. EGGERS

BREMEN AND
NEW YORK
CITY.

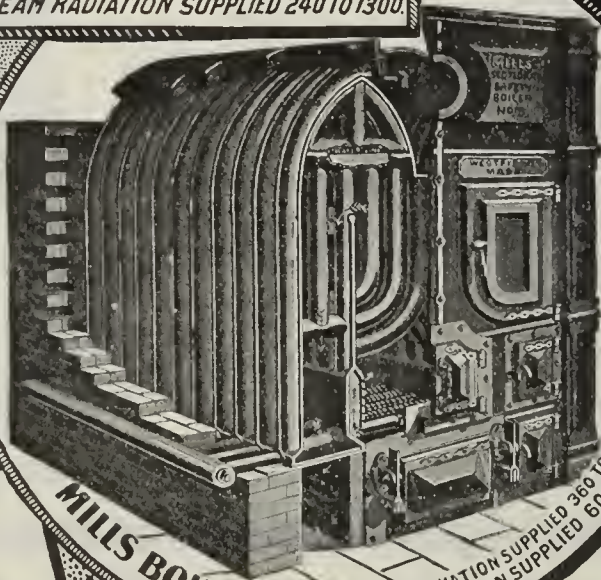


GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

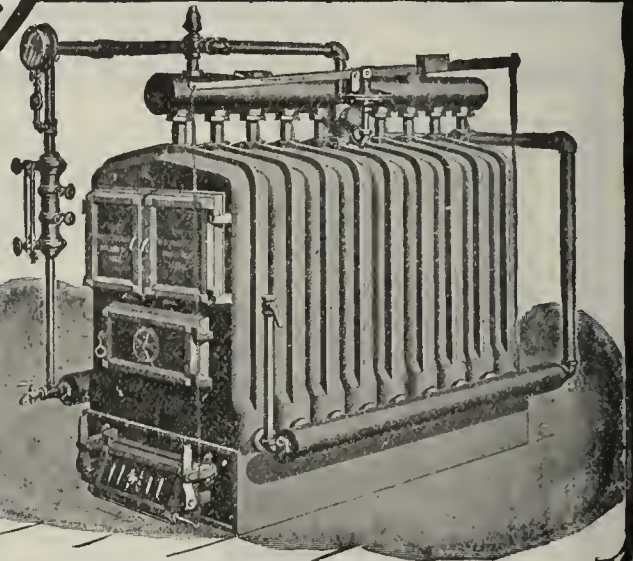


COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.

PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.



MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

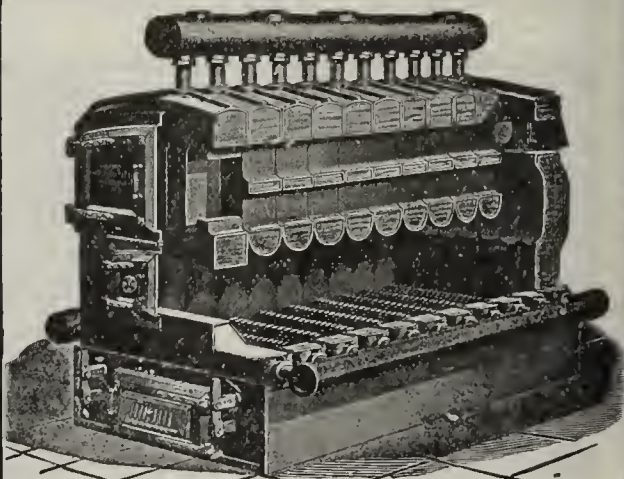
Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

SALESROOMS:

133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

JEWEL STOVES AND RANGES..



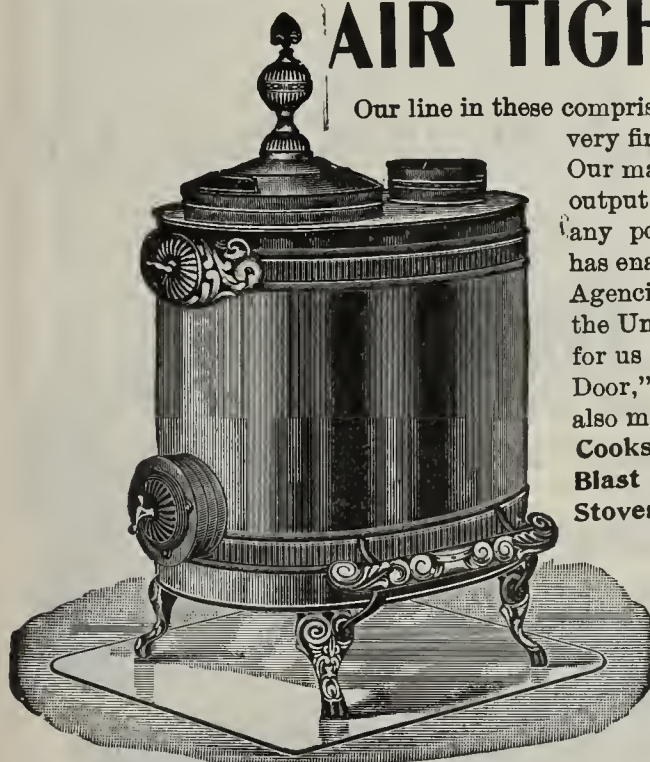
**A Complete, Well Advertised Line:
Low Prices and Good Workmanship.**

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.



Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

ECONOMY GAS HEATING STOVES.

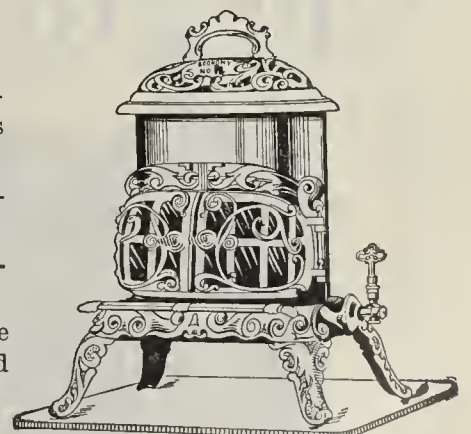
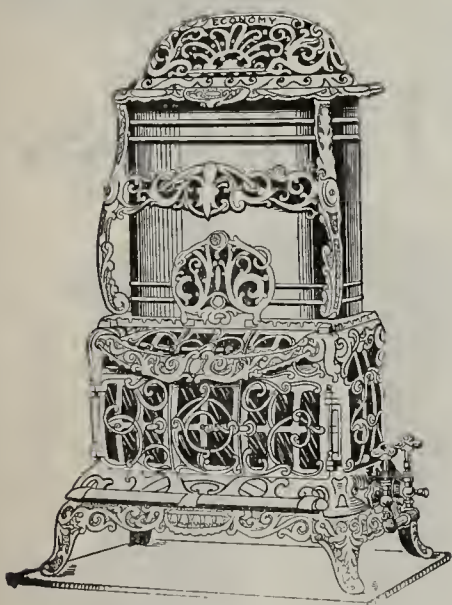
FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, **Durable, Economical** and **Attractive** gas heating stoves on earth.

The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market **Absolutely free from odor or condensation.**

By securing the agency for the **Economy**, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

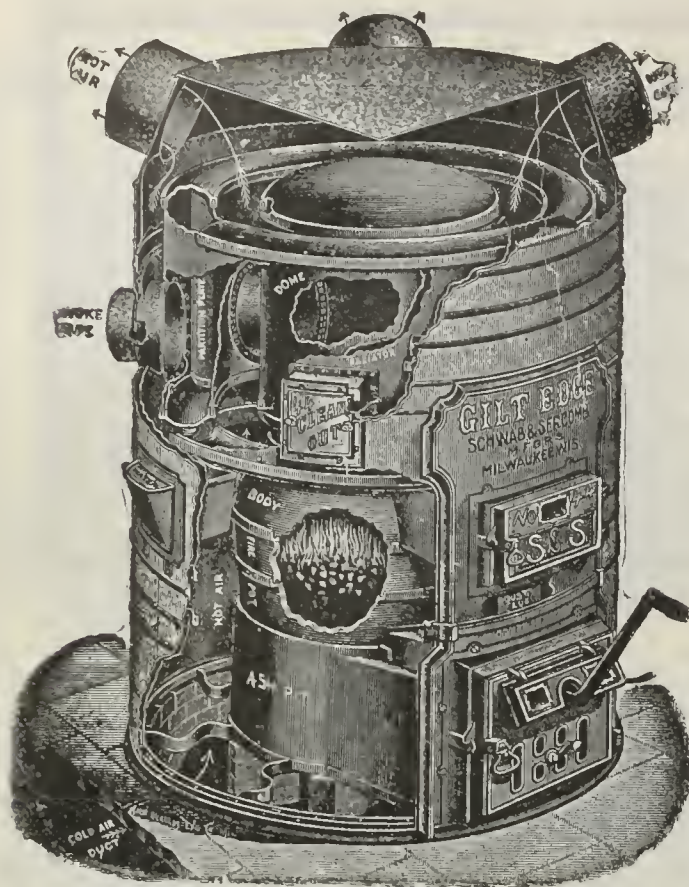
ECONOMY STOVE & MFG. CO.,
Write for Catalog. DETROIT, MICH.



BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

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MILWAUKEE, WIS.

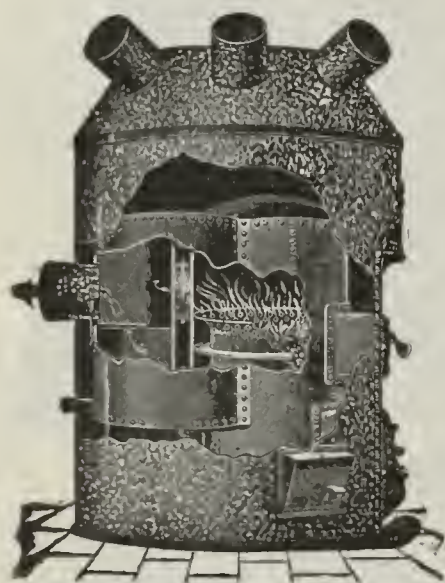


Gilt Edge Warm Air AND Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.



WEIR ALL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

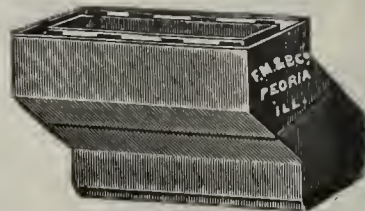
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



Up-to-date Air-Tight Heaters.

We Want Your Business!

Our Goods Are Strictly HIGH-
GRADE and DURABLE.

We Make 65 Styles and Sizes of
AIR-TIGHT HEATERS.

Our Heaters are made of Blue Polished Steel. Superior Finish. Best Proportioned Stoves made. Our Castings are Smooth. Our Mounting is perfect.

Screw Draft, Spark Arrestor, Extra Heavy Linings, Plate in Cover, Hinged Cover, Reinforced Tops that will not Warp.

Fuel Opening made with Wire Edge, preventing buckling and getting out of shape.

Bottoms Double Seamed. Feet Bolted to Cleats underneath Stove to prevent shipping.

Large Capacity. Prompt Shipment
GUARANTEED.

Quincy Foundry
& Novelty Co.,
QUINCY, ILL.

Write for Catalogue and Prices.

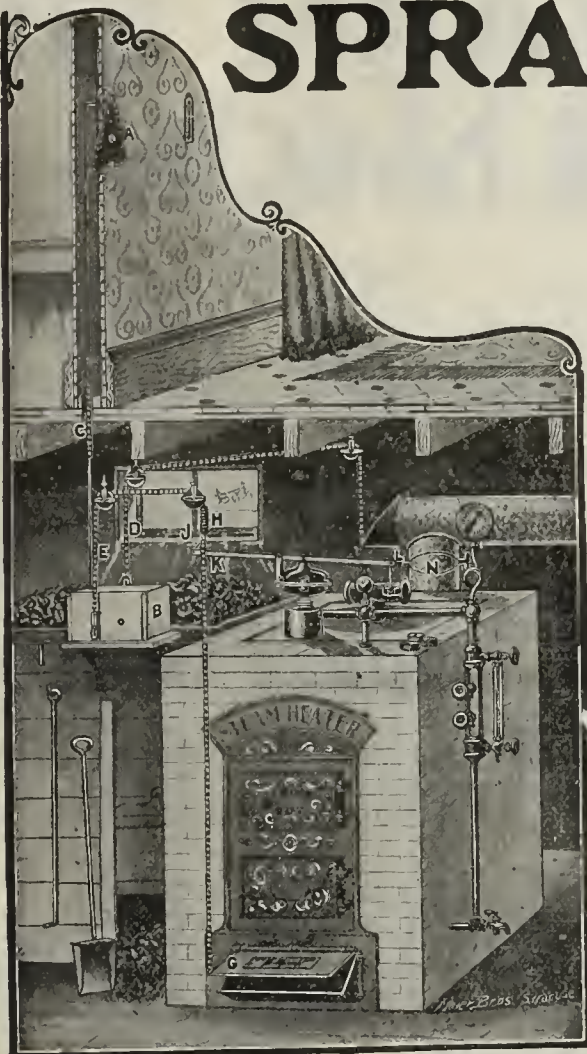


COSEY-Style C. HOT BLAST.



ROYAL-Style A.

SPRAGUE Damper and Valve Regulator.



AN ARGUMENT.

The Sprague Damper Regulator is the most faithful apparatus ever placed on the market for the regulation of heat. Why is it so faithful? Because it is so simple it cannot fail after once being installed and adjusted. It does not depend upon electricity or compressed air. The heat in the room warms the sensitive plate "A," causing expansion. Contraction is also unavoidable the moment the heat recedes. These two agencies alone do the work.

SOLD ON THIRTY DAYS'

TRIAL. Present this proposition to your customers. We offer you the exclusive sale.

Not An Argument With A Hole In It.

Made by HOWARD THERMOSTAT CO., Oswego, N. Y.



AMERICAN M & D STEEL RANGE

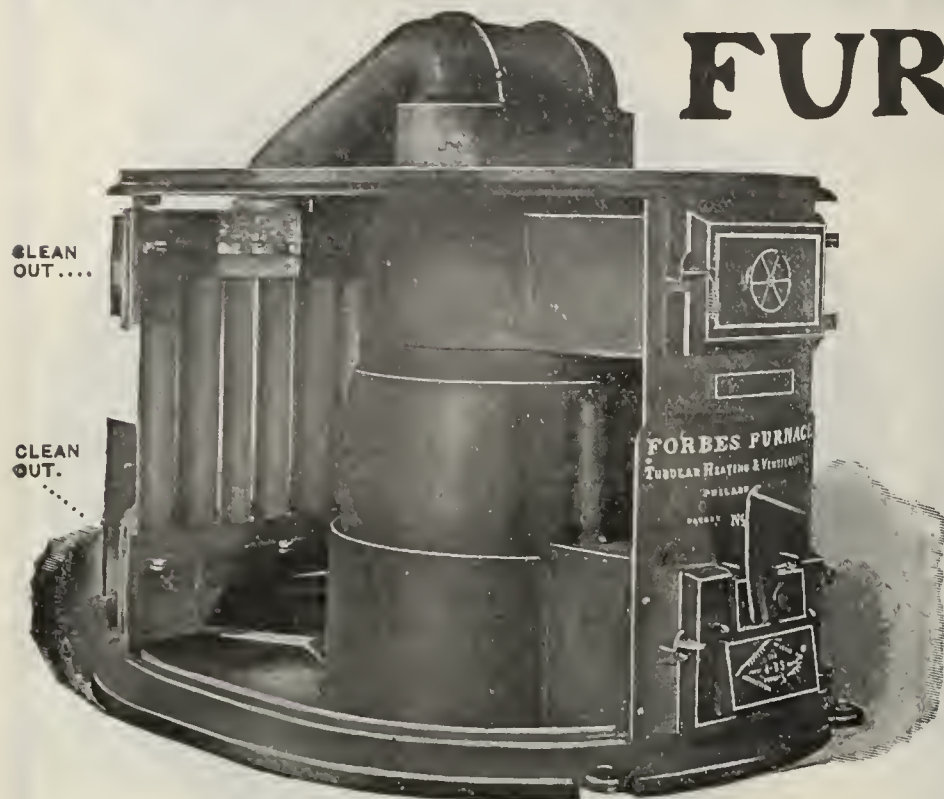
Best on Earth.

Made in FOUR SIZES, WHITE ENAMELED (INSIDE AND OUT) PORTABLE OR ENCASED RESERVOIR, as desired; LARGE POKE DOOR AND POUCH FEED; OVENS IRON FRAMED; BACK FLUE MADE of HEAVY CAST IRON; DUPLEX, DOCKASH or WOOD GRATES ALL SLIDE OUT. UNCLE SAM USES OUR HOTEL RANGES ON WAR VESSELS.

We make four sizes Double Oven Ranges. Write for catalogue and ask for circular of our new Combination Range.

M & D RANGE CO., 96-98-100 LAKE STREET,
CHICAGO.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick

in radiator will wear for years. Our improvements for 1901 give us a perfect heater.

Triplex Grate.

PERFECT SHAKING.

PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces, for Hard or Soft Coal.

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901



Deeper Ash Pit

Solid Front Shield

Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

*Modern Construction and Durable
Of Great Capacity*

Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

THE S. M. HOWES COMPANY

40, 42, 44, 46, Union Street
BOSTON, MASS.

GURNEY

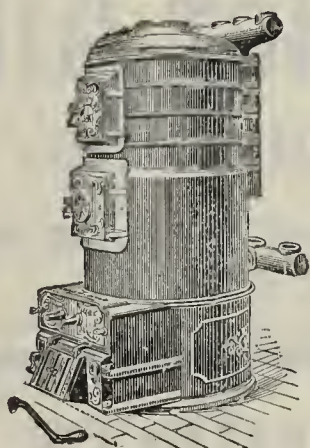
HOT WATER HEATERS

... AND ...

STEAM BOILERS

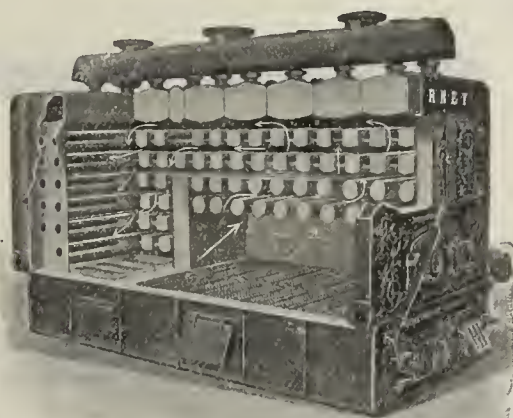
ARE SO CONSTRUCTED THAT THEY FURNISH
THE GREATEST POWER FROM LEAST FUEL.

THEY INSURE COMPLETE SATISFACTION.



"400 Series"
Hot Water Heater.

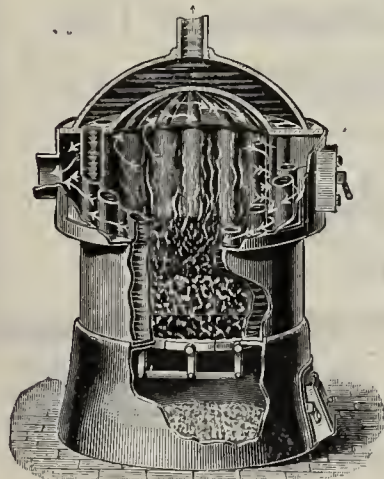
*Capacities for All
Requirements. . .*



"Bright Idea"
Safety Water Tube Boiler, for Steam
or Hot Water.



"400 Series"
Steam Boiler.



"Doric"
Hot Water Heater.

SEND FOR LATEST ILLUSTRATED TRADE
CATALOG.



"Defiance"
Hot Water Heater.

Gurney Heater Manufacturing Co.,

Home Office, 74 Franklin St., Cor. Arch, Boston, Mass.

Branch,
111 Fifth Ave., Cor. 18th St., New York City.

Western Selling Agents,
JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ill.

Royal Heaters.

MANUFACTURED BY THE

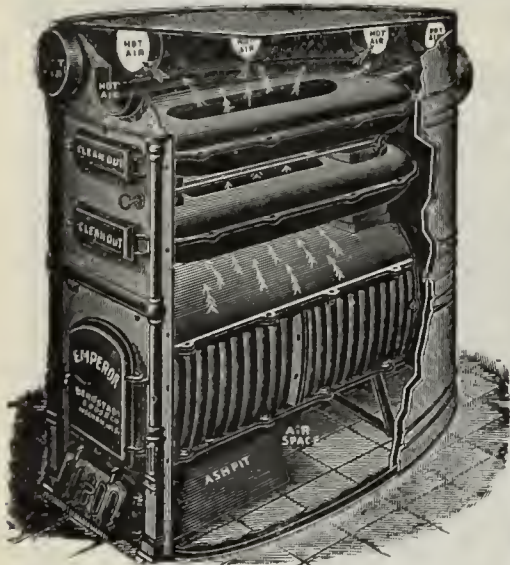
HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Flue.

The Best and Cheapest Line of Wood Furnaces,
 Furnished for either Brick or Galvanized Iron Casing.

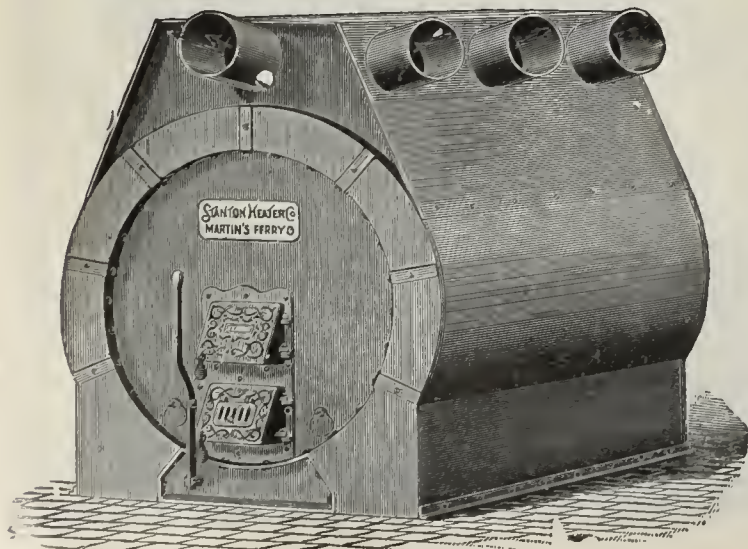
SEND FOR CATALOGUE.

Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



The cut herewith represents the *Stanton Seamless Heater complete*, with portable casing. The inside Casing Sheet is made of No. 24 cold rolled sheet steel. The outside casing is made of No. 24 Aluminum-coated sheet steel, which is anti-rust and will stand a much higher degree of heat than it will ever be subjected to before tarnishing. Heavy asbestos paper is placed between inside and outside casing, which prevents heat from radiating into cellar. *This coating will not peel off, but remain pretty and white.*

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

MARTIN'S FERRY, OHIO.

SEE OUR ADVERTISEMENT NEXT WEEK.

S U P E R I O R F U R N A C E S

U T I C A H E A T E R S

B U Y
T H E
B E S T

RUSH ORDERS.

We want your RUSH ORDER for
FURNACES.

Our unexcelled facilities, our extensive
line and our good stock on hand, enable
us to ship SUPERIOR Furnaces and
Utica Heaters the same day order is
received.

No Annoying Delays! We can surprise
you with Promptness.

We want YOUR Rush Order!

UTICA HEATER COMPANY, MANUFACTURERS,
UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO., Western Managers,

54 Dearborn Street, CHICAGO, ILL.

PERHAPS you don't know that you can buy the "DIGHTON" Furnace with Casings, Hot Air Pipes, Smoke-Pipe, Collars and Dampers, Elbows, Register-Boxes, Registers and Iron Borders at about the price you have to pay for most other good Furnaces for the castings alone.

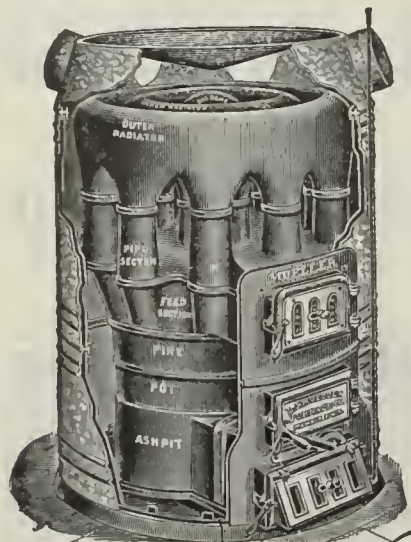
If you can guarantee your customer equal or better results than can be secured with other Furnaces, and we stand back of your guarantee, isn't it worth while for you to give the "DIGHTON" some consideration?

A 22 inch fire-pot "DIGHTON" will do more work than most other Furnaces having a 24 inch pot.

A 24 inch pot "DIGHTON" will do more and better work with less fuel than any other 24 inch pot Furnace, no matter what price you may pay for it.

DIGHTON FURNACE CO. - Taunton, Mass.

NONE AS GOOD.



DOUBLE RADIATOR. ALL CAST IRON.

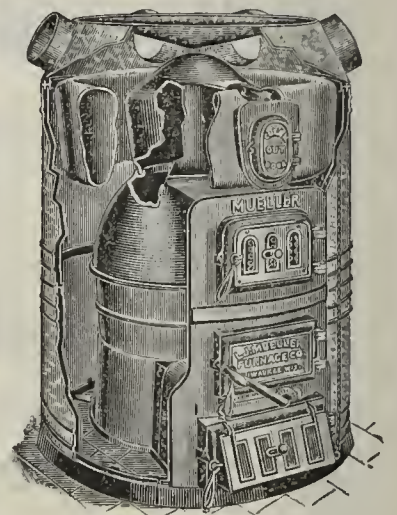
MUELLER Furnaces and Boilers ARE THE BEST.

Made in All Sizes and for All Kinds
of Fuel.

WRITE FOR CATALOGUE AND PRICES.

GET OUR SPECIAL REGISTER OFFER.

EVERYTHING IN THE HEATING LINE.



RETURN FLUE RADIATOR.
ALL CAST FURNACE.

L. J. MUELLER FURNACE CO.,

Established 1857.

190 Reed St., MILWAUKEE, WIS.

About Fire Pots.

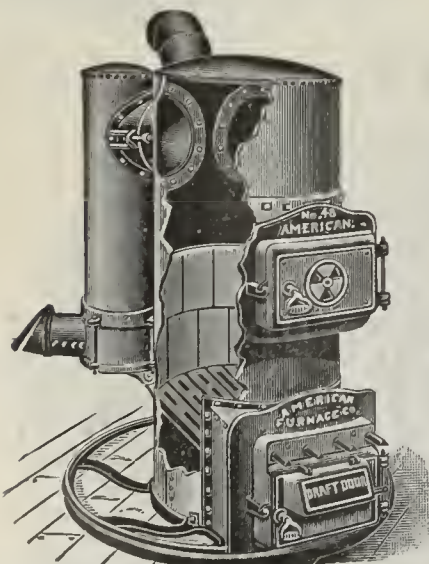
We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The AMERICAN FURNACE is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

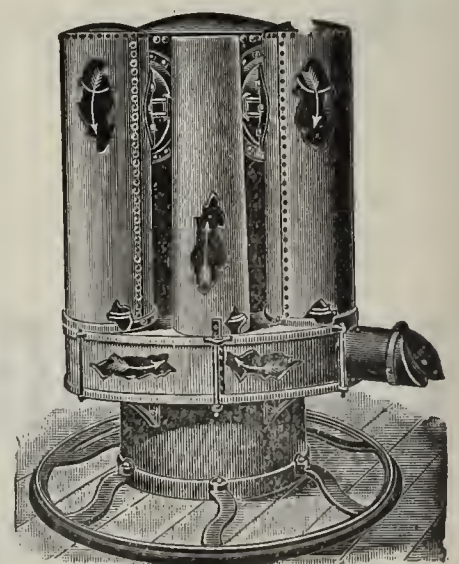
You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

Our Fall Styles Are Now Ready.



FAULTLESS FURNACES.

Extra Heavy Style—Highest Grade Made.

HERO FURNACES.

ALL-CAST or with STEEL RADIATOR.
Heavy, Durable, Powerful Styles.

COMFORT FURNACES.

Popular Style—Popular Prices.

RIVAL FURNACES.

Unique Style—Moderate Prices.

FULL PARTICULARS ON APPLICATION.

The Graff Furnace Co.,

208 WATER ST., NEW YORK.

WE MET A MAN THE OTHER DAY

who was paying 20% more for his registers, furnace pipe and fittings than we would have sold him the SAME material for. He was robbing his customer, losing money himself simply because he wasn't

A Wide Awake Man

THE WIRETON TIME REGULATOR.



A Marvelous Seller.

Will automatically turn on the draft of any furnace, steam or hot water boiler.

Don't be in his class. Drop us a postal. We want your business and are bound to have it if price, prompt delivery, and courteous treatment is any inducement to you.

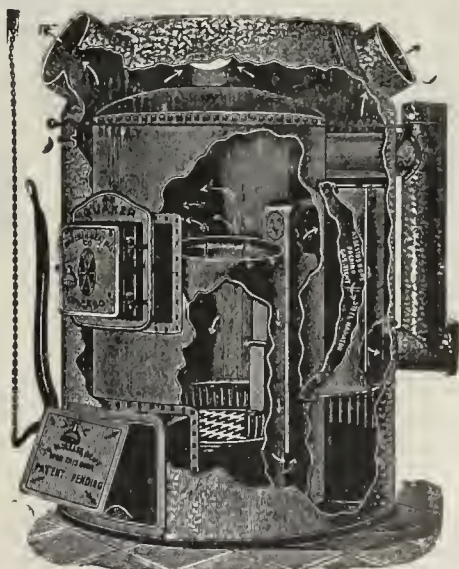
The **THREE** requirements for a first-class furnace are **ALL** Incorporated in the

New Quaker Furnace.

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and
ECONOMY in REPAIRS.



DROP US A POSTAL AND WE WILL TELL YOU ALL ABOUT IT.

Our furnaces and specialties are great levers for pushing business your way.
Exclusive agencies given.

WIRETON HEATING CO.,

Main Office and Works, Blue Island, Ill.

Chicago Office, 40 Dearborn St.

BENGAL FURNACES

ARE TRADE WINNERS.

EASY TO SELL.

SURE TO PLEASE.

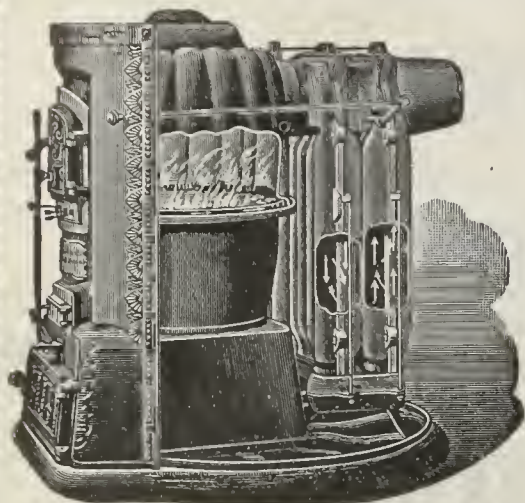
ALL CAST IRON.

Bengals meet all the requirements of convenience and economy—are simple in construction and manipulation, and

HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.



Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

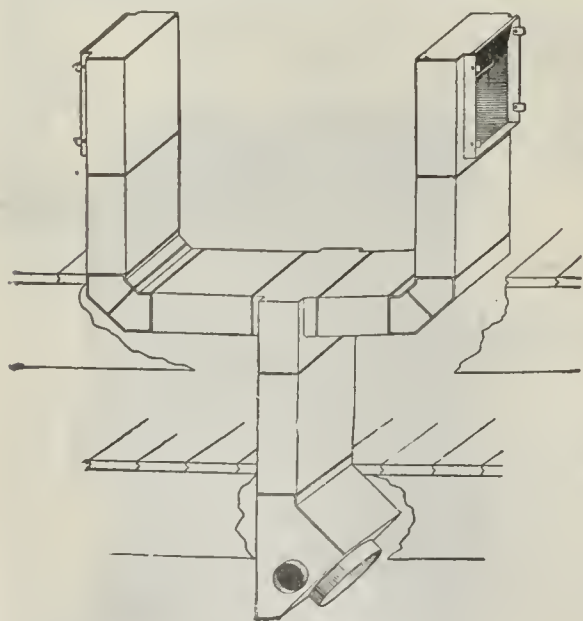
If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

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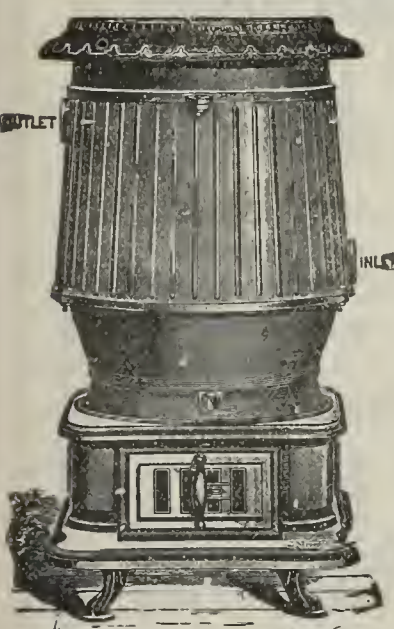
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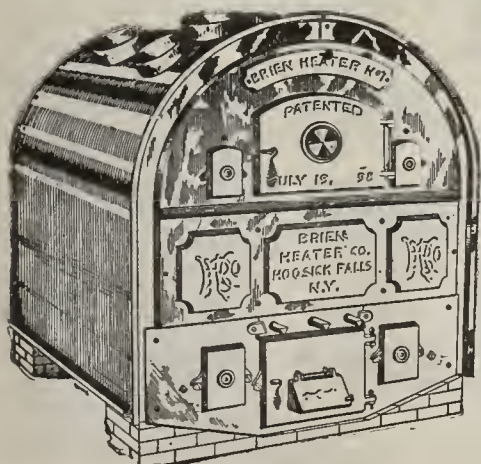
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Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

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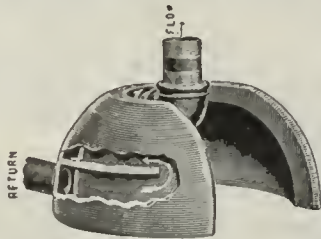
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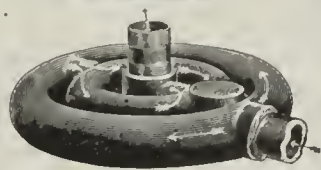
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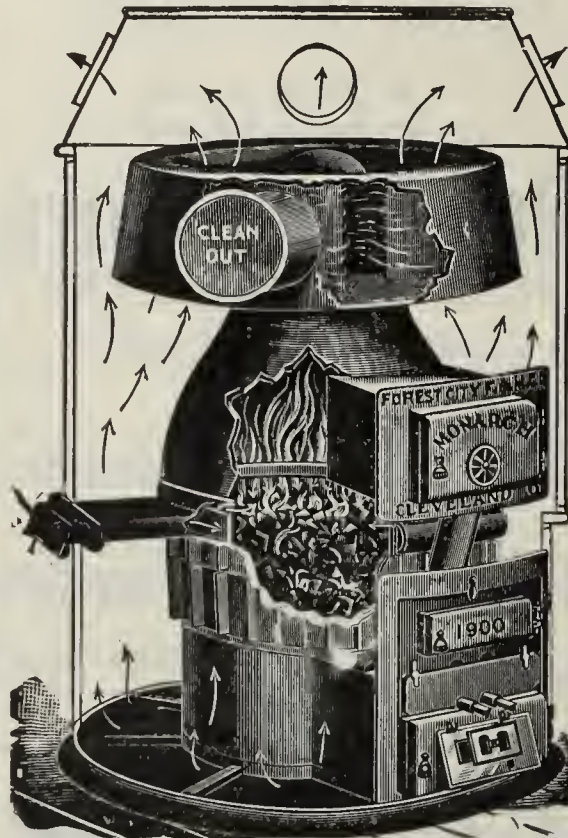
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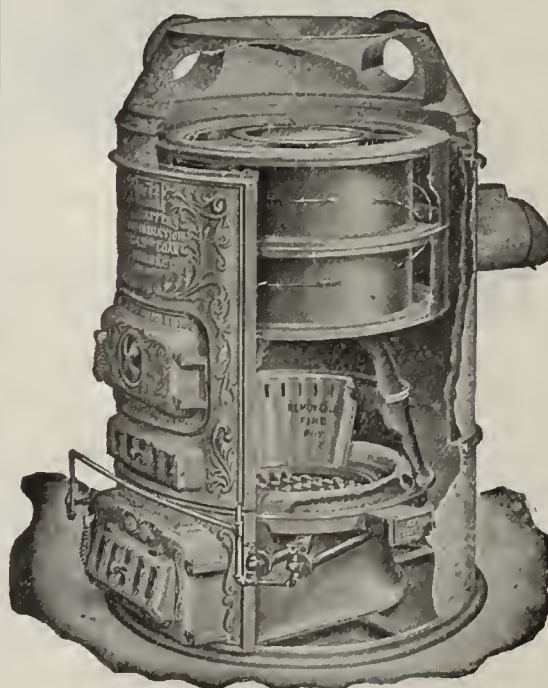
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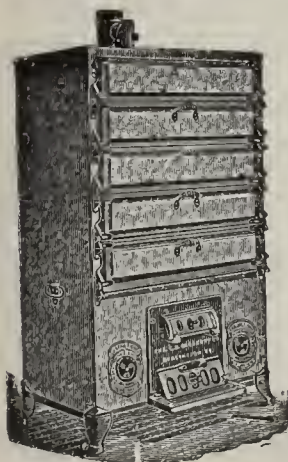
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	Page.
POINTS ON CHIMNEYS	7-32
An illustrated article by J. L. Barry, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES	33-35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.	
HOW TO IMPROVE A WEAK CHIMNEY	36-40
VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
CONNECTED FLUES DESTROY DRAFT	52-55
FAILS TO BAKE ON BOTTOM	56-62

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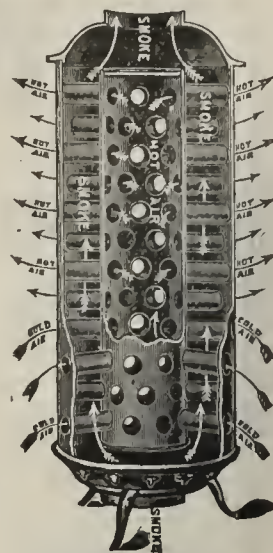
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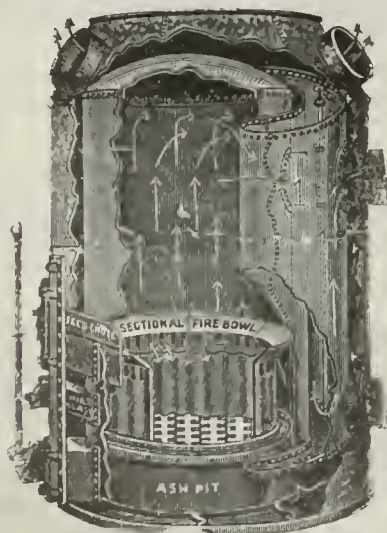
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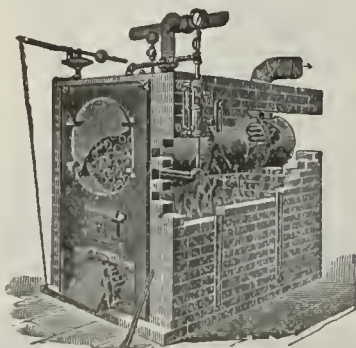
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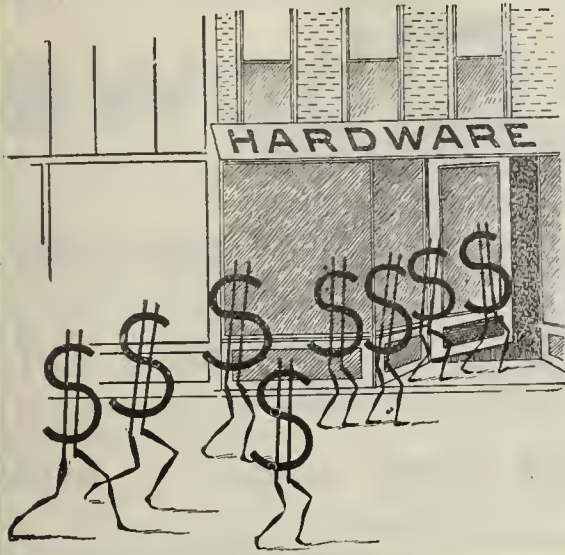
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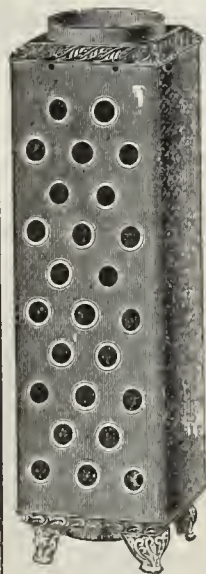
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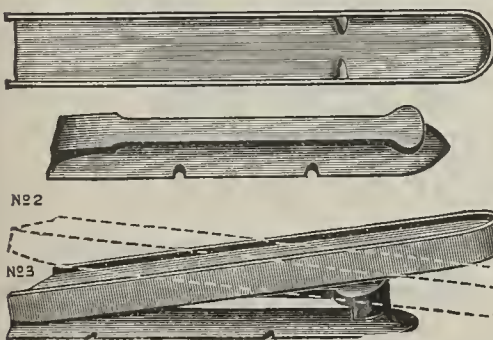
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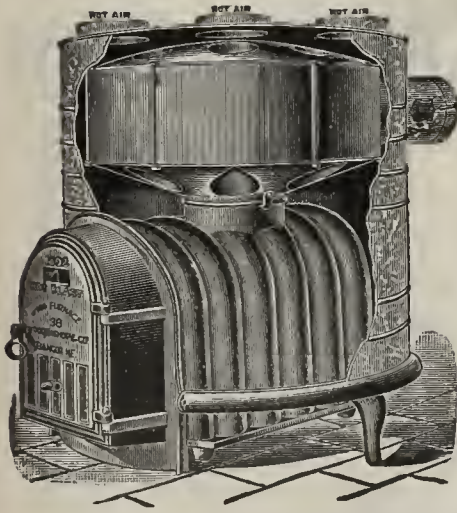
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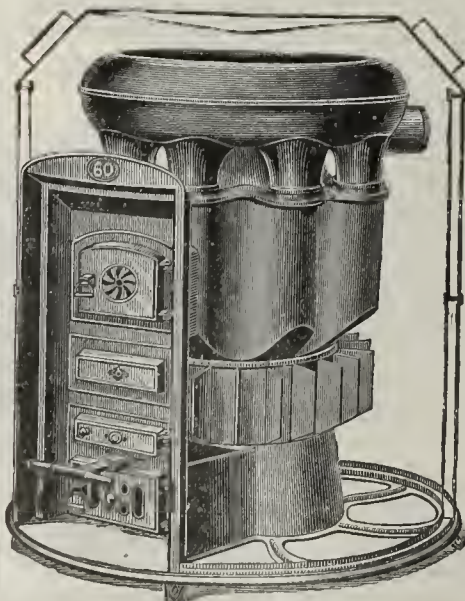
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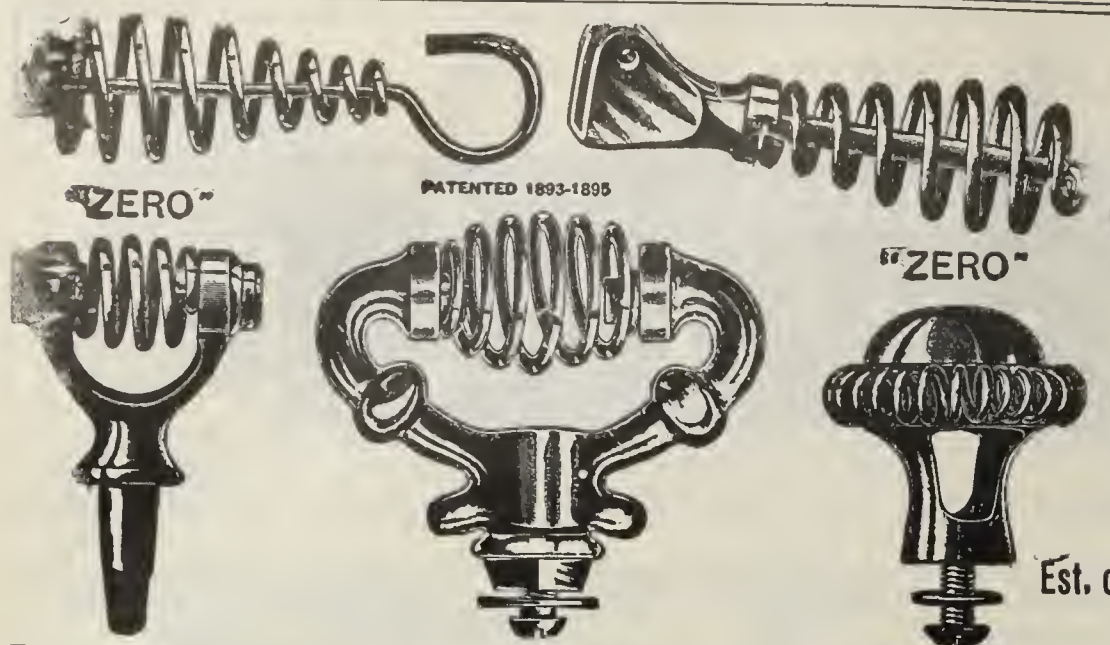
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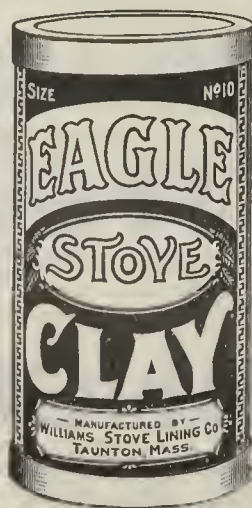
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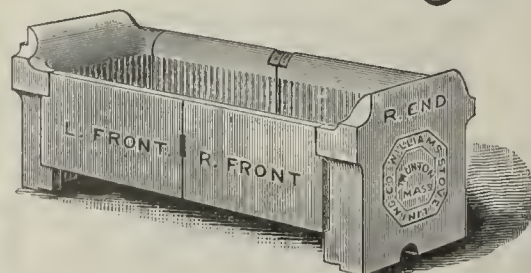
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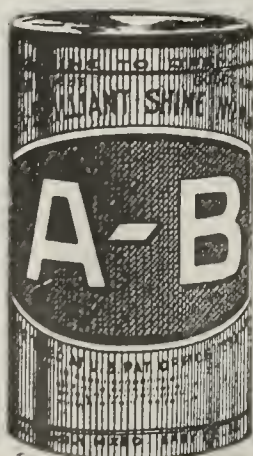
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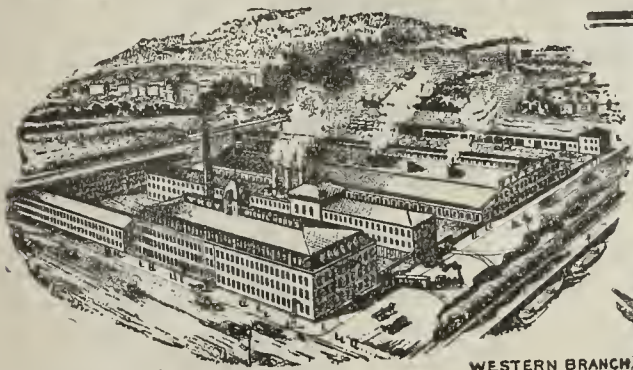
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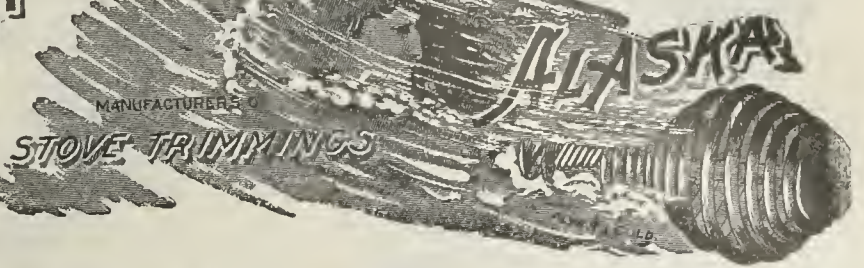
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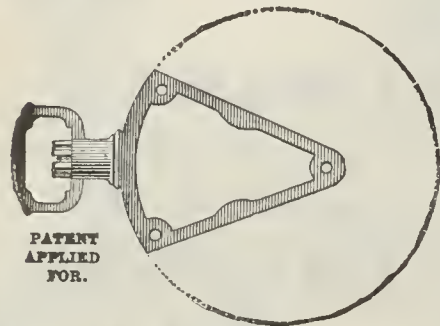
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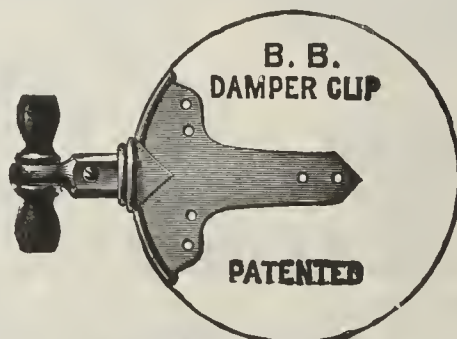
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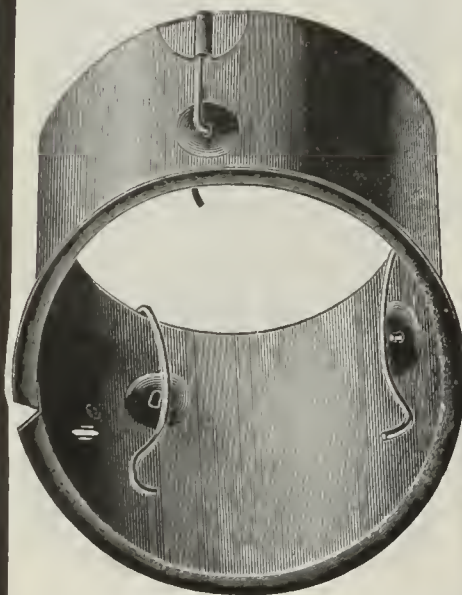
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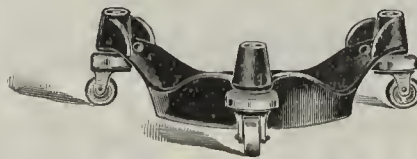
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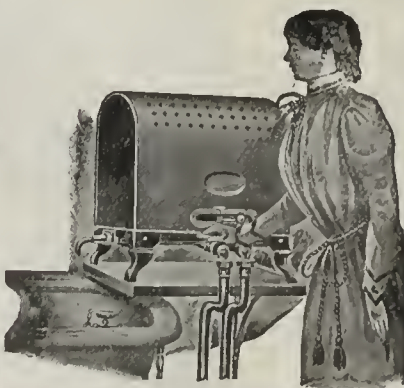
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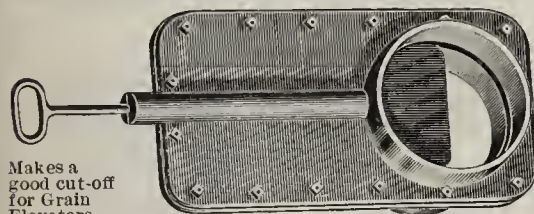
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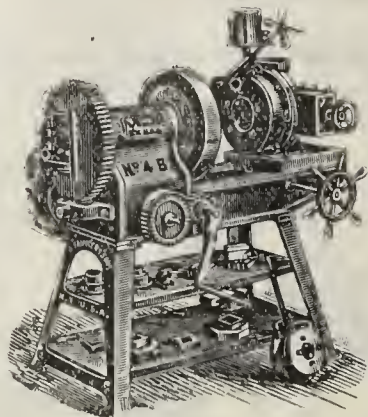
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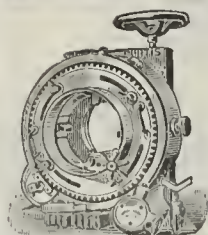
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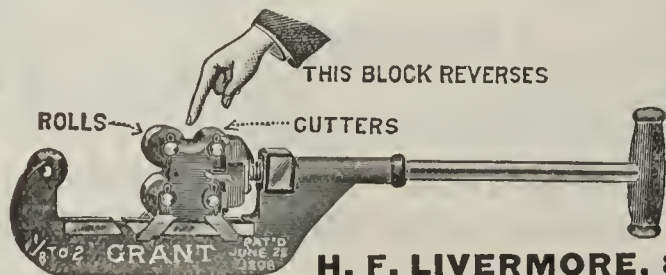


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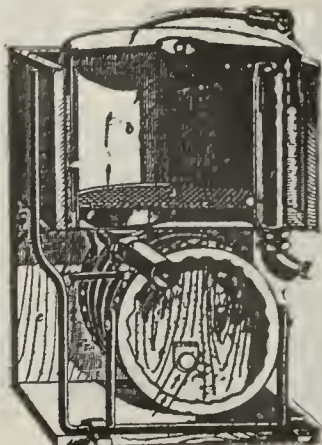
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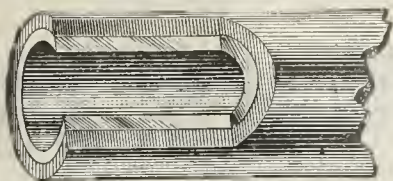


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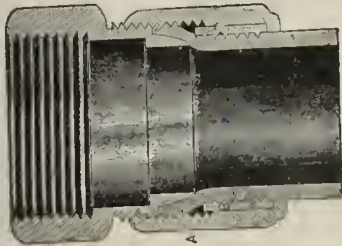
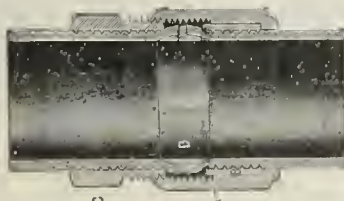
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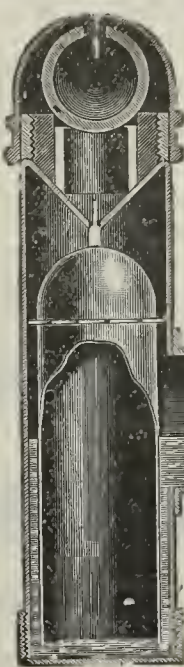
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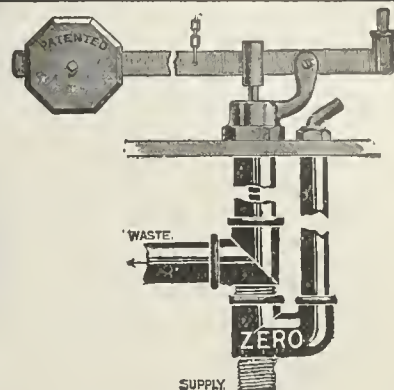
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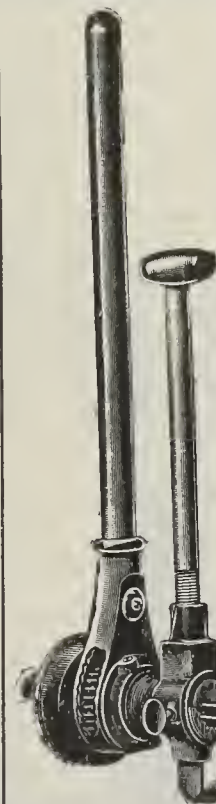
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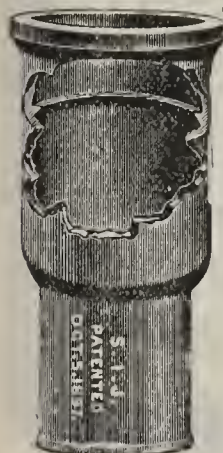
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Retail Stove and Sheet Metal Associations.

In a recent issue mention was made of the organization of the retail stove and sheet metal working trades of Wilmington, Del., into an association for the purpose of mutual trade protection and the promotion of good feeling among the various concerns engaged in this class of business in the city. The subject of associations of retail merchants is one that is commanding increasing attention throughout the country at the present time. The movement has reached its highest development in connection with the retail hardware trade, but other branches of business in which our readers are interested are also taking it up. The Wilmington association is not the first organization of the kind. Already several associations of stove and furnace dealers and sheet metal workers are in operation in various cities in the East and South, and a movement is now on foot to form these local associations into a national organization, similar to that organized by the hardware associations. The tendency of the age appears to be marked in the direction of association in all branches of trade. The advantages derived from these organizations are obvious. Associations among retail dealers are accomplishing a great deal of good. They are working along the line of co-operation and from them advanced ideas are promulgated. The individual firms are benefited, acerbities of cutthroat competition are eliminated and a brotherly feeling is promoted which tends to the advantage of all concerned. It has been found that the trades in which these associations have been formed are elevated by the better feeling engendered among the members, and that distinct benefits accrue from the exchange of ideas and experiences which are developed at the meetings of the associations, whether in the nature of local gatherings or district, State or National conventions.

Electrical Heating.

The time when an electric wire can be run into a building and connected with an apparatus for heating the various rooms it may contain depends entirely upon how soon the cost of producing electricity can be brought down to a level at which it can compete with other methods of heating. At a recent exhibition of the Street Railway Association in Madison Square Garden, New York, where several manufacturers displayed the newest things in electrical heaters adapted for street car

use, one manufacturer announced that he had in course of completion an electrical heater adapted for heating rooms. This heater is intended to be used very much the same as a direct-indirect steam or hot water radiator. It is so constructed that its use is practicable wherever there is an electric lighting system, it being necessary merely to disconnect the wires from the ordinary illuminating globe and connect them with the electric heater. This device is designed to be placed in the window in such a way that on raising the window slightly a current of air will pass over the electric heater and flow into the building warm enough to maintain a comfortable temperature. It would seem that in a room having several windows one of the heaters would be necessary for each window, should the temperature drop to a sharp cold. These heaters, however, are designed only for use in moderately cold weather, and are not intended to supplant the usual heating apparatus when severe winter weather sets in.

The experts who have devoted their time to the reduction of the cost of car heating are devising electrical heaters adapted for that work. These all agree that if the expenses of running a plant, the wear and tear, repairs and all other such costs were charged against the heating of the offices at the power stations by electricity, it would be found that it would be cheaper to heat the building with a stove or some one of the other methods of heating in general use. The fact that electrical heaters are used in cars is not because they are cheaper than the coal stove, but on account of their other advantages. When stoves are used in a car the fire must be replenished with fuel, the ashes must be removed, and more or less dirt is made, which calls in an extra laborer to keep the car clean. Moreover, a large percentage of the coal is wasted, unconsumed. Taking these facts into consideration and comparing them with the extra cost of heating the car with electricity, it has been judged expedient to stand the higher expense in order to secure the greater convenience and comfort. There is nothing new in this conclusion, but when the best electrical heaters are shown in so important an exhibition and the views of experts in their manufacture are unanimous that electrical heating has not yet reached a point where it is available for use in all kinds of buildings, it seems clear that something has yet to be done along cheapening lines before the care, labor and dirt of the heating systems now in general use can be avoided by the adoption of electrical heating.

Central Station Heating.

If a building cannot yet be effectively and economically heated by pressing a button, a very substantial convenience in heating homes has been made available from electrical power stations. To generate electricity power is necessary, and this has been derived from the generation and use of steam in the engines that run the dynamos. Instead of allowing the exhaust steam from these engines to go to waste in the atmosphere, as was done in the past, it has been gathered in as one of the by-products of the power station, and saved in order to reduce the cost of producing electricity. A number of cities and towns throughout the country at the present

time have street heating systems which derive their heat from electrical power stations. In some cases the exhaust steam direct from the engines is being circulated along the streets, and through the mains and branches is carried into the residences and buildings of customers. Another method of using this steam is for heating water, which is similarly circulated through street mains and carried into the buildings of customers for heating purposes. The latter method seems to be gaining in popularity, as being more economical than steam heating. It is also found that there is less difficulty from expansion and contraction in the street mains and the branches leading from them. The customer, moreover, is not only furnished with heat without trouble to himself, but gets it in the degree suitable to the weather. Through expert supervision of the water heaters at the power station the water is circulated at a higher temperature when the weather is cold and at a lower temperature during mild spells. In consequence, the customer has no occasion to open or close a valve, but his house is heated to a proper degree under all changes of the weather. In view of the convenience derived from such central heating systems the desire for direct electrical heating loses much of its urgency.

The Metric System.

The metric system is to-day compulsory in twenty civilized countries, representing more than 300,000,000 inhabitants and embracing nearly all the leading nations of the world. Almost alone among the countries of any importance, the United States and Great Britain still hold out against its adoption. That this refusal to depart from our standards of weights and measures is operating to the disadvantage of our foreign trade is constantly being brought to the notice of American manufacturers and exporters by our consular representatives and others who have studied commercial conditions abroad. As an illustration of the inconvenience caused to foreign buyers, the United States Consul at Amsterdam cites a case where a firm in Holland received a cable offer from New York for two thousand barrels of potatoes. As this was a new business, the question at once arose how many pounds were there in a barrel of potatoes? A whole day was lost before the answer could be wired. Had the offer been made in kilograms every business man in the commercial world from Vladivostok to Mauritius would have understood it instantly. The necessity for American business men to adopt the metric system, at least for use in their foreign trade relations, is becoming more and more pronounced.

Labor in Japan.

According to United States Consul-General Bellows at Yokohama there is wide complaint in Japan of the lack of skilled labor. This want, it is claimed, is a serious hindrance to the introduction of foreign capital, so earnestly desired by progressive Japanese. While wages are low in Japan, it is pointed out by the local advocates of skilled labor that there is a great difference, as compared with Europe and America, as to the amount and quality of the work produced by the present poorly paid Japanese workmen. If this is taken into consideration, it is found that wages are relatively higher in Japan than in Europe and America. At present the condition of labor is deplorable. According to a native writer on social economics, children under ten years of age are largely employed in factories, and both men and women are generally made to work for injuriously ex-

cessive hours. Fourteen, 16 and even 18 hours a day are often worked in factories. There are more than 320 working days in the year, and yet the pay for this labor is infinitesimal, the amount in many cases being not more than \$5 or \$6 a month for from 14 to 17 hours' work a day. In many factories no provision whatever is made for suitable ventilation or sanitary facilities. Japan has no laws for the protection of labor or the restricting of the employment of women and children. But the subject is now being considerably discussed, and it is believed that some legislation of the kind will be introduced at the next session of the Japanese Diet. It is interesting to note in this connection that the agitation which has arisen for the betterment of the conditions of the Japanese laborer comes principally from the educated and professional classes, rather than from the laborers themselves.

Editorial Notes.

An Eastern concern, who are carrying on a plumbing, gas fitting and metal working business, adopted, some years ago, the policy of giving a house or its representative the opportunity of making but one quotation on any line of goods. It is well known to the trade that the concern do not "jew down" nor countenance "meeting prices." The member of the concern who does the buying keeps well posted on market conditions, and before making a purchase forms an idea of what the goods should cost. Two or three houses who are most likely to meet the requirements in quality and price are then requested to furnish quotations. The houses appreciate the conditions, and the concern usually receive satisfactory quotations without further inquiry. The policy saves much time and insures pleasant relations between buyer and seller.

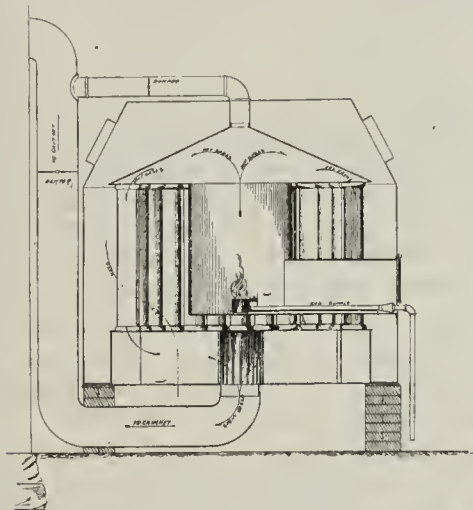
An event of special significance connected with the meeting of the National Hardware Association at Cleveland last week was the formation of the American Hardware Manufacturers' Association. This project has often been considered, but until now no steps have been taken looking to concerted action in this direction. The movement starts in under most favorable auspices, and there will unquestionably be a large accession to the membership of the association. It promises to exert a wide influence and to be a source of benefit to manufacturers and the trade in general.

Ernest Schenk, president of the Crystal Palace Company of London, is now in this country in the interest of the American Exhibition, to be held in the Crystal Palace, from May to September, 1902, under the auspices of the American Society of London. The undertaking, Mr. Schenk says, promises to be the largest and most important exposition of American products, arts, industries and inventions ever seen in Europe. None other than American exhibits will be presented. One of the departments will embrace machinery and mechanical appliances of all kinds, together with hardware, tools and metal products, and another, that of hygiene, will take in lighting, heating, ventilating and sanitary appliances of every description. The other departments include natural and agricultural products, prepared food products, pharmaceutical and kindred preparations, carriages and vehicles of all kinds, textiles, fabrics and clothing, musical instruments, &c.

The final census report for 1900 places the population of the United States at 76,303,387, of whom 9,312,585 are colored, and 66,990,802 are white. The report shows that the males number 39,059,242, or 51.2 per cent. of the total population.

THE THOMPSON GAS FURNACE.

One of the newest furnaces to make its appearance, especially constructed to burn natural gas, is the Thompson furnace, made by the Springfield Furnace Company of Springfield, Ohio. The special feature of construction is the large amount of heating surface presented and the long travel the products of combustion are forced to make before they find an exit, the evident idea being to utilize, as far as possible, all of the heat from the products of combustion that is not necessary to aid the draft



The Thompson Gas Furnace.—Fig. 1.—Sectional Elevation.

in the chimney to carry them off. Fig. 1 is a sectional elevation, and Fig. 2 is a broken view of the base drum. A special burner is placed in a large combustion chamber, arranged as shown. This burner is so constructed that it gives to the gas and air entering a swirling motion, which effects a thorough mixture. This mixture is burned in a circular sheet with a central and an outer column of air. By this process a perfectly blue flame of very high temperature is secured as well as a very complete combustion of the gas. The burner is set in operation by means of a pilot light. This central combustion chamber is surmounted by an extended conical top. From the bottom of this extended top there are a number of round pipes which carry the products of combustion to the base drum shown in Fig. 2. From the outer chamber of this drum the hot gases are carried to the central flue through narrow, spoke like conduits.

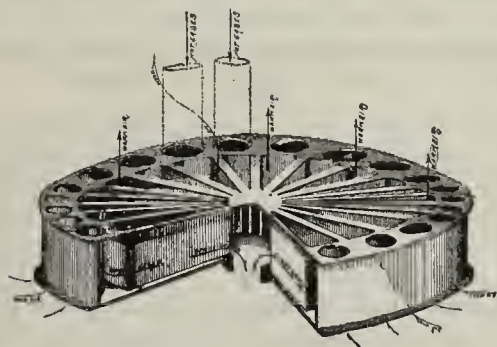


Fig. 2.—Broken View of Base Drum.

From this central flue the chimney connection is made, as shown.

From the cuts and this explanation it will be seen that the hot gases are made to effect an indirect passage to the smoke flue. It will also be noted that the construction exposes a large expanse of surface, which is hottest at the top. The air on entering the furnace comes in contact with the warm surfaces and as it rises, with hotter and hotter surfaces, until the hottest surface is passed over just before the air enters the hot air pipes. The construction of the down flues of the furnace is such as to distribute the products of combustion evenly over the surface, so that all parts are said to be equally well heated. The furnace is made in several sizes adapted for heating different sizes of buildings. A catalogue can be secured on application, which gives full detailed explanation of its construction and operation.

Boynton Furnaces.

An attractively gotten up furnace catalogue and price-list for 1901-1902, consisting of 48 pages, has been issued by the Boynton Furnace Company, 207-209 Water street, New York, and 147-149 Lake street, Chicago. Several pages at the beginning are devoted to information under the head of "Important to the Trade," pointing out that it is necessary, in order to determine the size of furnaces required for given work, to get the size and character of the buildings, and many other features which have a bearing on successful heating. It is also stated that each line of Boynton coal furnaces, with the exception of school heaters and the Patriot and Special Niagara, has two series of numbers, one series covering furnaces with draw center grates, and the other with triangular revolving grates. The statement is made that all furnaces will be shipped with steel plate radiators unless especially ordered with cast iron radiators, and that a patent draft regulator is shipped with every furnace. Information is also given of the approximate and comparative heating capacity of the different furnaces, and of the various dimensions of the company's latest furnaces. Two pages show the different grates used by the house.

The place of honor in the catalogue is given to the Boynton school heater, which has made an enviable record in service. This is followed by the new gas tight self cleaning furnace, an all cast iron construction with a return flue radiator so designed as to present a large heating surface and to effect an indirect passage from it of the products of combustion. This is followed by the Boynton Renown furnace, sectional cuts being used in addition to broken views in order to make the construction thoroughly understood. The Boynton new steel dome furnace is made either a direct draft or indirect draft furnace by the manipulation of a damper. The Climax and Crusader are provided with corrugated fire pots and combustion chambers, in order to increase the heating surface, and are surmounted with either cast iron or steel drums, as may be desired. The Patriot and Special Niagara are two furnaces made either with cast iron or steel plate return flue radiators presenting a large amount of heating surface.

The catalogue also presents two styles of wood burning furnaces, adapted either for portable or brick setting and capable of burning wood 5 feet in length. By means of broken and transparent views the water heaters are shown in the various furnaces mentioned, adapted for service as combination hot water and hot air apparatus. Directions are also given for setting the Boynton furnaces in brick chambers, with full explanations and dimensions for the work. The Fire King circulating warm air heater and the Fire King heating stove are followed by a page devoted to the Boynton patent regulating ventilator and smoke pipe damper, which is furnished with all their furnaces. The catalogue contains a three-page price-list of hot air registers. The last page calls attention to the variety of ranges and steam and hot water heaters made by the house.

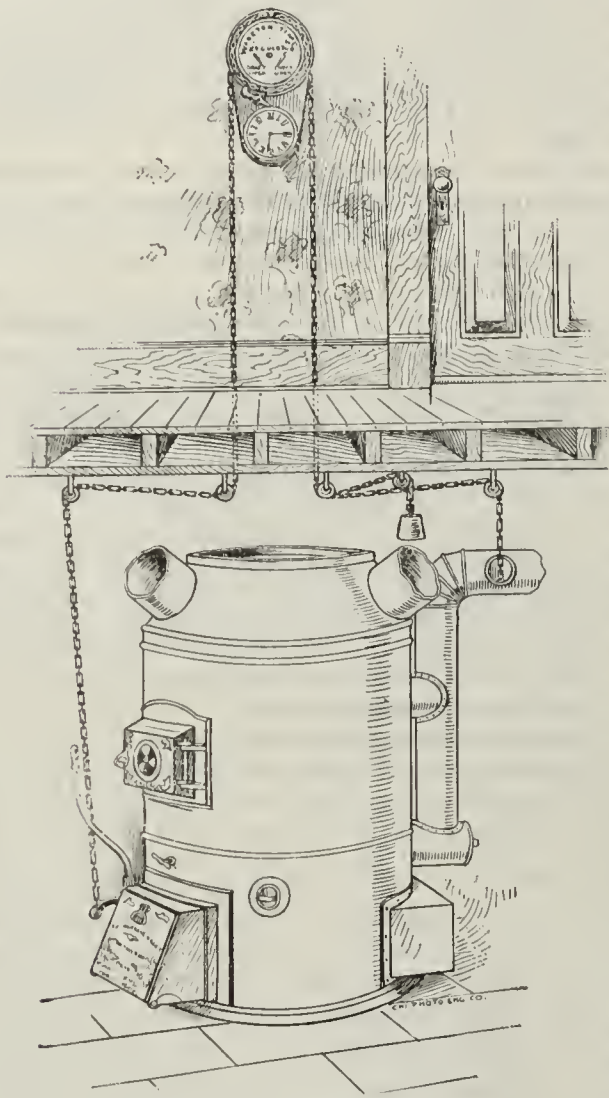
Star Ranges and Heaters.

We have received from the Enterprise Stove Company, Vincennes, Ind., a copy of the supplemental catalogue which they have issued showing some of their new patterns for the season of 1901. The company have been engaged in the business of stove manufacture for a period of 28 years, and feel that they are in a position to thoroughly understand the requirements of the trade. On the second page of the covers is a copy of the guarantee which the company give with every cook stove or range made by them, and accompanying it is the statement that if any stove of their manufacture, either cook or heater, cracks by fire inside of one year from the date of issue of the guarantee, they will furnish such casting free of charge. The new patterns which the company have brought out include ranges, cook stoves and heaters, of which the Magic and Domestic Star are steel ranges, and the Watson Star is a steel cook stove. These are made in the usual modifications and embody

the latest features of convenience and utility. The ornamentation is rich and effective, pleasing contracts being produced by the use of nickeled parts. In the way of new heating stoves may be mentioned the Model Star base burner, the Star Oak, with air tight base, and the Pilot Star, the latter being a handsome air tight for burning wood as a fuel. The Star radiator, another specialty for which the manufacturers make strong claims, can be used as a single or a double heater. The Starry Oak is a neat surface burning construction, which is offered at a low price and is made in three sizes.

The Wireton Time Regulator in Operation.

An illustration is presented herewith of the Wireton time regulator, showing its application to a warm air furnace. The Wireton automatic time draft is a device which automatically turns on the draft of a furnace or



The Wireton Time Regulator in Operation.

steam or hot water boiler at a certain time. It consists of a clock to which is connected a pivoted dog, which at the proper time releases a ratchet having attached to it chains which open the draft. This action of the ratchet is secured by a weight suitably attached in the basement. The clock is a standard alarm clock, and can be used as an alarm in conjunction with operating the heater drafts if so desired. At night the drafts may be turned completely off, and at 5 or 6 a.m., or any other predetermined hour for which the clock has been set, the regulator is released and the draft is automatically turned on. This device combines a time draft, draft regulator, a guaranteed time piece and an alarm clock, all in one.

The illustration shows the regulator attached to the wall of a room, with the chains passing to the basement and connected as they should be with the draft and check doors of the furnace. The arrangement will be easily understood from this illustration. It will be seen that during the day the drafts of the heater can be controlled at will by the regulator in the living room. This device is one of those happy inventions which meet with

an instant demand, evidently filling a long felt want. It is, therefore, a remarkable seller, and furnacemen who show it to their customers find that almost invariably this results in a sale. It is manufactured by the Wireton Heating Company, whose main office is at Blue Island, Ill., and Chicago office is at 40 Dearborn street.

ODD PLATES.

THE ENTERPRISE STOVE COMPANY, Vincennes, Ind., are distributing a little pamphlet of 20 pages of a size convenient to carry in the pocket, relating to the Gas Ranges which they manufacture. The object of the booklet is to show the advantages of gas as a fuel for domestic purposes. Reference is made to the efficiency, comfort, cleanliness and economy resulting from the use of gas as a fuel in cooking operations, and illustrations are given of the Star Progress and Star Imperial Gas Ranges. A feature of the little pamphlet which will strongly appeal to the housewife is found in a series of recipes of dishes which may be readily cooked by means of a Gas Range.

A LICENSE to incorporate has been issued to Max I. Heldman, Charles O. Reynolds, and James S. Shortle, who are organizing the Stearnes Steel Range Company at Chicago, with a capital stock of \$5000.

THE KELSEY FURNACE COMPANY of Syracuse, N. Y., advise us that the Kelsey Warm Air Generator received the silver medal and highest award for warm air heating apparatus at the Pan-American Exposition.

THE HANKS FOUNDRY & STOVE WORKS have recently been incorporated at Rome, Ga., with a capital stock of \$12,000, the object being to manufacture all kinds of Stoves. The incorporators include J. D. Hanks, W. W. Smith, and M. Z. Whitehead.

WITH the compliments of the Troy Nickel Works, manufacturers of Stove Trimmings, Albany, N. Y., a neat little pamphlet is being circulated among their friends and customers, containing the last speech of the late President McKinley, delivered at the Pan-American Exposition in Buffalo on September 5. A feature of the little book is an excellent portrait of the lamented President.

A LITTLE circular in a three-color effect, sent out by the Ideal Mfg. Company, Detroit, Mich., in the interest of the Ideal Ruby Gas Heater, is well calculated to draw the attention of the trade to this little Stove. It is 7½ inches in diameter, 25 inches high, made with a perforated steel body of dead black finish with nickel trimmings, and is equipped with a specially constructed gas burner of about 18 cubic feet capacity.

W. J. BURTON & Co., Detroit, Mich., inform us that they have improved their Burton Fuel Economizer by nickel plated trimmings. This gives the Economizer a more ornamental appearance, and is calculated to aid the dealer in effecting sales. The price of the device has not been advanced on account of the nickel plating.

A FOLDER, which is being sent out by the Pittsburgh Stove & Range Company of Pittsburgh, Pa., states that the Etna Furnace, which the company are prepared to furnish, is adapted to meet varied requirements. They state that 20 years' experience in Furnace making, with a constant study for possible improvements, has enabled them to produce in the Etna "the highest grade, most practical and most serviceable Furnace of this generation." The claims are made that it is constructed of the best materials, is simple in construction, and gives satisfactory results in operation.

THE VICTOR STOVE COMPANY, Salem, Ohio, are sending through the mail a calendar card for October calling attention to the Victor Stoves and Ranges, and suggesting to their customers the advisability of sending in orders promptly in order to be sure of getting their supplies in good time for the fall and winter trade. A cut is given of the Victor Oak, with the statement that this Stove can be furnished with hot blast pipe, inside fire pot and steel liners or magazine.

At the convention of the National Hardware Association, held last week in Cleveland, Ohio, the Champion

Steel Range Company of that city presented to the delegates as a souvenir an elegant enameled cigar ash tray, which was highly appreciated by the recipients.

A RECENT ISSUE of the *Detroit Press* contained a very interesting description of "How a Stove is Made," the account being based upon the observations of a representative of the paper who visited the extensive plant of the Detroit Stove Works. A bird's-eye view of the works occupies the entire width of the paper at the head of the page containing the article in question. There is also a general view of the Western warehouse, office and salesrooms erected in Chicago in 1893 by the company named.

"EVERY MINUTE COUNTS" is the head line of a card printed in colors, which is being sent out by H. Adler & Co. of Pittsburgh, Pa. The picture accompanying the text represents a steam fire engine drawn by galloping horses, and evidently on the way to a fire. Obviously, in such a case, every minute counts, and the company point out that "every hour means an age when you have a ripe sale but cannot get the goods." They state that they can fill every order the same day it is received, as their capacity is a Stove every minute packed and ready for delivery. Their output last year is stated to have been 65,000 Stoves and "nobody had to wait." The company make Gas Stoves and Heaters of all kinds, and have issued an illustrated catalogue known as No. 34, which gives full information regarding their specialties.

THE MICHIGAN STOVE COMPANY are furnishing to their agents, to be used for advertising purposes, a pocket portfolio envelope. This envelope is manufactured of very stout paper, and is of a size and shape making it suitable for inclosing documents to be preserved from wear and tear when carried in the pocket. The envelope bears on it tables giving the population of the largest cities in the Union and of the various States, as well as blanks to be filled up for the personal identification of the owner.

A POSTER announces the sale by the assignee of the plant of the Schuylkill Valley Stove Company at Spring City, Pa., on November 1 at 2 o'clock. The sale will take place on the premises, which contain 5 acres of land on two lines of transportation. A description is given of the buildings, equipment, patterns and stock. The assignee, George D. Peters, announces that the property will be disposed of at public sale and that 10 per cent. of the purchase money must be in cash and the balance must be paid in 30 days, with security in the meantime.

Exposition of Alcohol Consuming Apparatus in Paris.

The enormous production of alcohol in France has led M. Jean Dupuy, Minister of Agriculture, to offer a series of prizes for any kind of apparatus or machinery that will open a way for its greater consumption. United States Consul Covert, at Lyons, reports that an exhibition of inventions for the use of alcohol for illuminating or heating purposes or for motor power will be given in Paris in the grand palace of the exposition, Champs Elysées, from November 16 to 24. The prizes awarded will consist of a series of medals. The exhibition and experiments will be divided into three classes:

1. Stationary motors, motors for navigation, locomobiles and motors for working pumps, automobiles under 25 horse-power, insulated carburetors.
2. Incandescent lighting, divided in two classes: (1) Apparatus using pure medicated alcohol; (2) apparatus using carbureted alcohol.
3. Heating apartments, bath houses and hothouses for flowers, chafing dishes, dish warmers, flat iron heaters, curling irons, lamps, &c.

It is not stated whether the citizens of other countries will be permitted to compete for the prizes, but, in any case, the Consul says, the presence of Americans in Paris with their apparatus for the consumption of alcohol would furnish a good opportunity for introducing their goods into the French market. Mr. Covert further suggests to Americans who may attend the coming exhibition that lighting, heating and cooking apparatus

will be likely to receive favorable attention in France, where coal is dear and oil pays a high customs duty, as well as freight over 3000 or 4000 miles of land and sea. It is possible that a small handy cooking apparatus, heated by alcohol, would fill a want. All over France there are thousands of people who lead an isolated existence in one room, up four or six flights of stairs, who would prepare their first meal of coffee or chocolate and their evening soup on such a contrivance. The national custom, especially among the poor and middle class, is to take these two meals in a cheap restaurant; but customs change, and the effort to introduce new uses for alcohol may be a means of breaking up this habit—above all, if it is in harmony with ideas of strict economy.

A NEGRO TRADE SCHOOL.

We have received the thirty-third annual report of the Hampton Normal and Agricultural Institute of Hampton, Va., covering the year ending June 30, 1901. This report shows that the institution is doing excellent and valuable work in imparting instruction in the trades to colored youths. During the past season 165 students were taught the blacksmithing, wheelwrighting, carpentry, painting, tinsmithing, steam fitting, machinists', brick laying, shoemaking, tailoring and upholstering trades in the Armstrong-Slater Trade School, which was opened a few years ago as a memorial to the late General S. C. Armstrong, the founder of the Hampton Institute. The industrial department of the institute is given special prominence in the curriculum of the school. Since 1868, when the school was founded, about 5000 young men have gone out of the institution equipped with the wherewithal to earn their living at some manual trade. Of the students who have been taught trades about 70 per cent. are said to be now either working at them or teaching them. Many of these have opened shops in various parts of the South, and have succeeded in building up a good business and thereby earning more than a competence.

The plant of the Hampton Institute is valued at \$600,000. It is free from debt and is exempt from taxation. There are 55 buildings, including large dormitories, agriculture and domestic science buildings, a memorial church, academic buildings and shops in which instruction is given in 16 trades. The institute also owns two farms and about 800 acres of land. The trade school, which was opened five years ago, is equipped with facilities unsurpassed anywhere in the South for the training of mechanics. The trade instruction is supplementary to the general educational course, the idea being to provide the students with a well grounded manual and mechanical equipment. All the work of the various trades done about the Institute is carried on by the students under the direction of their instructors. Mechanical drawing is taught to all the students in the trade school. A recent addition is an iron foundry equipment, which has just been purchased and is to be put in operation at once.

The value of this kind of industrial training to the colored youths of the South can scarcely be overestimated. It enables them to become useful, self supporting and self respecting members of the community. The Hampton Institute is the parent of the Tuskegee, Calhoun and several other industrial schools for negroes which are now doing such good work in the South. Undertakings of this class probably furnish the best solution of the much discussed problem of how to help the Southern negro.

THE NATIONAL LEAD COMPANY, Atlantic Branch, 100 William street, New York, are distributing a 24-page circular in the interests of their Solders. These include Solders of all grades and in every form, Bar, Ingot and Triangle in Bar or Drops; also Wire and Strip Solder. An interesting feature of the catalogue is the fact that the company are offering no less than five qualities of Half and Half Solder. Tables are also provided, giving the sizes and weights of the National Lead Company's Lead Pipe, Lead and Tin Tubing, Tin Lined Lead Pipe, Block Tin Pipe and Sheet Lead.

AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION ORGANIZED.

The banquet hall of the Hollenden Hotel, Cleveland, Ohio, was crowded on Wednesday afternoon, October 9, with hardware manufacturers and their representatives, who met with the object of considering the advisability of forming a manufacturers' association. The meeting was called to order by H. B. Lupton, who nominated Robert Garland of the Standard Chain Company as temporary chairman, F. G. Mitchell being elected temporary secretary.

Mr. Garland made an able address, pointing out the desirability of the formation of an organization by the manufacturers of hardware. He was supported along similar lines by a number of other manufacturers present. The chairman explained that the association would in no way try to fix prices, but that its object would be simply to broaden their field and make the trade understand, for example, what 10 and 30 days mean; what a contract is; perhaps to formulate a uniform contract; to reach an understanding concerning guarantees, &c. The association would meet twice a year at the hardware jobbers' conventions. On motion a committee of ten was appointed to report a basis of organization the following day.

On Thursday morning the American Hardware Manufacturers' Association was formed at a second meeting in the Hollenden Hotel, Chairman Robert Garland presiding. C. S. Van Wagoner, president of the Van Wagoner Company, chairman of the Provisional Committee, reported as follows:

Your committee appointed for the purpose of formulating plans for a permanent organization begs to report as follows:

That this association shall be known as the American Hardware Manufacturers' Association.

OBJECT: To further the interests of the manufacturers and promote cordial relations with the distributors.

It is recommended that a permanent organization be effected, consisting of the following officers:

President:

Fayette R. Plumb, Fayette R. Plumb, Incorporated, Philadelphia, Pa.

Vice-Presidents:

Samuel M. Nicholson, Nicholson File Company, Providence, R. I.
C. S. Van Wagoner, Van Wagoner Company, Cleveland, Ohio.
F. S. Kretsinger, Iowa Farming Tool Company, Fort Madison, Iowa.

Secretary-Treasurer:

F. D. Mitchell, Standard Chain Company, Pittsburgh, Pa.

Executive Committee:

Robert Garland, Standard Chain Company, Pittsburgh, Pa.
Henry B. Lupton, Oliver Iron & Steel Company, Pittsburgh, Pa.
N. A. Gladding, E. C. Atkins & Co., Indianapolis, Ind.
W. S. McKinney, McKinney Mfg. Company, Allegheny, Pa.
Samuel Disston, Henry Disston & Sons, Philadelphia, Pa.
C. E. Adams, Cleveland Hardware Company, Cleveland, Ohio.
James Kelly, Kelly Axe Mfg. Company, Alexandria, Ind.
J. C. Birge, St. Louis Shovel Company, St. Louis, Mo.

The report was accepted by unanimous vote, and Fayette R. Plumb, the newly elected president, took the chair, and made an able and luminous address. Between 80 and 90 manufacturers applied for membership in the association, and a Committee on Membership was appointed, to whom the eligibility of applicants for membership was referred.

There was some discussion as to the houses which should be eligible for membership. The general consensus of opinion was that membership should be limited to manufacturers, and the matter was thus determined as per the following resolutions, which were unanimously adopted:

Resolved, That the American Hardware Association be composed exclusively and strictly of manufacturers of goods handled by the Hardware trade.

As the matter is thus decided, any firm or corporation engaged in the manufacture of goods handled by the hardware trade may, upon the recommendation of the Membership Committee and the unanimous consent of the Executive Committee, become a member of the association by subscribing to the constitution and by-laws and the payment of the membership fee of \$10. It has also been determined that no manufacturer who is also engaged in the jobbing business can become a member,

nor are manufacturers' agents eligible to membership in the association. Applications for membership should be mailed to F. D. Mitchell, secretary and treasurer, First National Bank Building, Pittsburgh, Pa., to secure prompt attention from the Committee on Membership.

New England Hardware Dealers' Association.

The regular monthly meeting and dinner of the New England Hardware Dealers' Association was held at the United States Hotel, Boston, Wednesday evening, October 9. About 60 members were present. Mayor Thomas N. Hart was their principal guest, and he made a very interesting address relative to Boston and its improvements during the past two years. Among the other speakers were James N. Frye, Charles A. Burditt, George S. Saunders and Anthony S. Morss, all of whom related reminiscences of their early hardware experiences in or near Dock Square, Boston.

The association invited the following, who are the oldest Hardwaremen of Boston, to be present at this meeting, but the first four mentioned were unable to be present owing to their advanced age: Nathaniel B. Doggett, George T. Carter, George Allen, Martin L. Bradford, George S. Saunders, Charles A. Burditt and Daniel Goodnow. Music was furnished during the dinner by a trombone quartette from the Lynn Cadet Band, and the selections were much enjoyed.

The National Hardware Association.

The seventh annual convention of the National Hardware Association, held at Cleveland, Ohio, closed on Friday, October 11, after electing the following officers for the ensuing year:

President, R. A. Kirk, Farwell, Ozmun, Kirk & Co., St. Paul, Minn.

First Vice-President, John C. Koch, John Pritzlaff Hardware Company, Milwaukee, Wis.

Second Vice-President, Brace Hayden, Dunham, Carri-gan & Hayden Company, San Francisco, Cal.

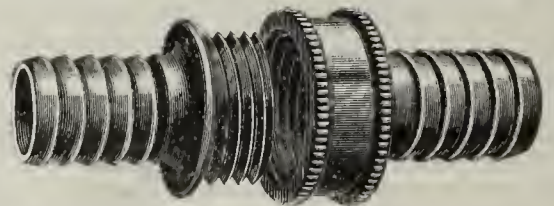
Secretary-Treasurer, T. James Fernley, Philadelphia, Pa.

W. S. Wright of Omaha, Neb., and Col. R. M. Dudley of Nashville, Tenn., were chosen members of the Executive Committee, the other members being Samuel Bigelow of Boston, Mass.; W. R. Belknap of Louisville, Ky.; P. E. Strauss, Boston, Mass., and J. D. Moore of Birmingham, Ala.

It was decided to hold the eighth annual convention of the association in New Orleans, La.

The Sherman Hose Coupling.

Shown herewith is a hose coupling stamped from sheet brass offered by the H. B. Sherman Mfg. Company, Battle Creek, Mich. It is referred to as having all



The Sherman Hose Coupling.

of the essential features of the cast coupling, with the following improvements: That it gives a full water way in the hose, that it presents a finished appearance in the hose, that the knurled flanges on the union nut afford a better grip for the hand in making connections, that the use of sheet brass drawn into the form shown in this coupling does away with sand holes and flaws, that all parts are made from very heavy sheet brass, that it is a solid, substantial article, designed to give satisfaction under all conditions; that the coupling shanks are deeply corrugated, which is a great advantage in itself, as it enables the coupling to be clamped in the hose securely, and that each of the three parts of the coupling is complete in itself, being seamless and made from one piece, there being no soldered joints.

The Gem Portable Pivoted Garbage Receptacle.

Illustrated herewith is a garbage receptacle, placed on the market by Cameron & Purks, Philadelphia, Pa. The device is easily adjusted to a fence, and is centered for the outward swing on malleable iron pivots and cleats.



Fig. 1.—Gem Portable Pivoted Garbage Receptacle, Yard Side.

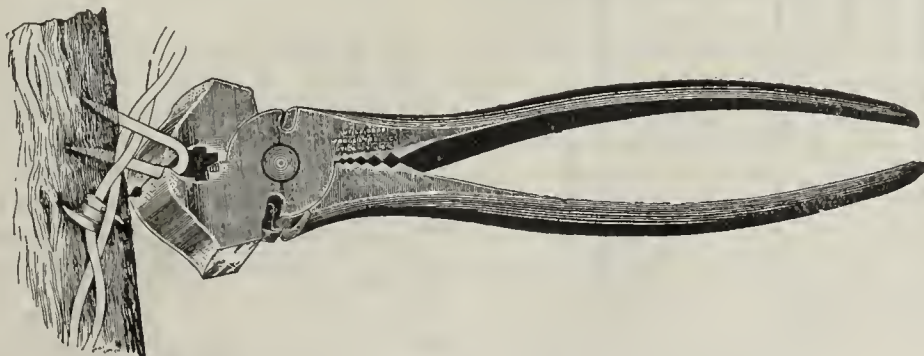


Fig. 2.—Garbage Receptacle on Public Side.

It is so arranged as to automatically return to its original position. The lid is mounted on the fence and so adjusted, it is explained, that when opened it must return to the closed position, thus preventing disagreeable odors arising from the receptacle, due to bad fitting or open lids. The receptacle is made of heavy galvanized iron and has a capacity of a bushel of refuse. In dumping it swings to an angle of 45 degrees, and when desired can be lifted from its pivots for cleaning, repairs, &c., and easily replaced. A device is also attached for locking the receptacle on the inner side of the fence, so that it can be emptied at will, at the same time preventing its being tampered with from the outside.

Improved Russell Staple Puller.

The Utica Drop Forge & Tool Company, Utica, N. Y., for whom Smith & Hemenway Company, 296 Broadway, New York, are direct representatives, have brought out an improved form of the Russell staple puller, as shown herewith. The new features include a device between the jaws and the pivot for tying barbed wire, and a wire splicer on the opposite side of pivot for splicing plain wire. Other changes are in the form or shape of the jaw ends, which now have a flat surface and larger hammer surfaces on both sides of jaws. Other details



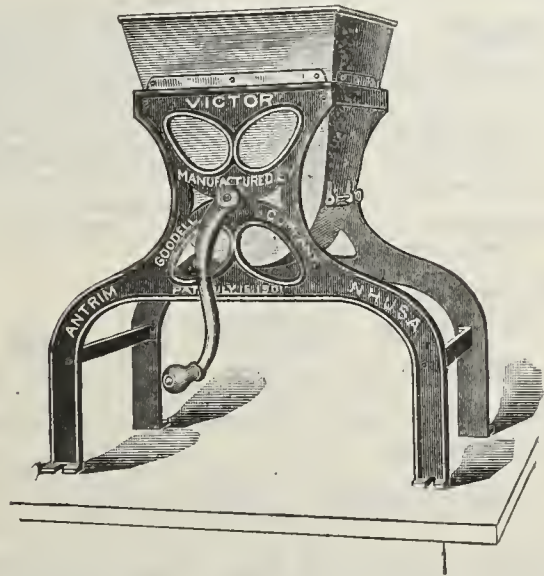
Improved Russell Staple Puller and Combination Tool.

of this combination tool are two staple pullers, pincers, monkey wrench, two nail pullers and two wire cutters. It is 10½ inches long and weighs 1½ pounds.

Victor Vegetable Masher.

Goodell Company, Antrim, N. H., and 10 Warren street, New York, manufacturers of cutlery and hardware specialties, supplementing their line of bread crumbing machines of somewhat similar construction, have just put on the market the Victor vegetable masher, here illustrated. Potatoes, turnips or vegetables of

like character to be mashed after cooking are thrown into the hopper, the top dimensions of which are 13 x 14 inches, with an extreme depth of 14 inches, when by means of a three-blade reverse curve or S shaped spider, in each of which are three rectangular openings, the material is quickly forced through sieves at the bottom which have a 3-16-inch mesh. The mashing capacity of the machine is given as a bushel of cooked vegetables in four minutes or less. This device is also recommended for mashing fruit, and is intended for such places as hotels, restaurants, boarding houses, clubs, steamships, canning, preserving and yeast factories, &c. It is said to convert potatoes into a light, flaky and smooth body of even grain. The sieves will not clog and can be taken out for washing and quickly reassembled. There are few pieces in this machine, all the working parts are tinned to prevent rust, and it is solidly built



Victor Vegetable and Fruit Masher.

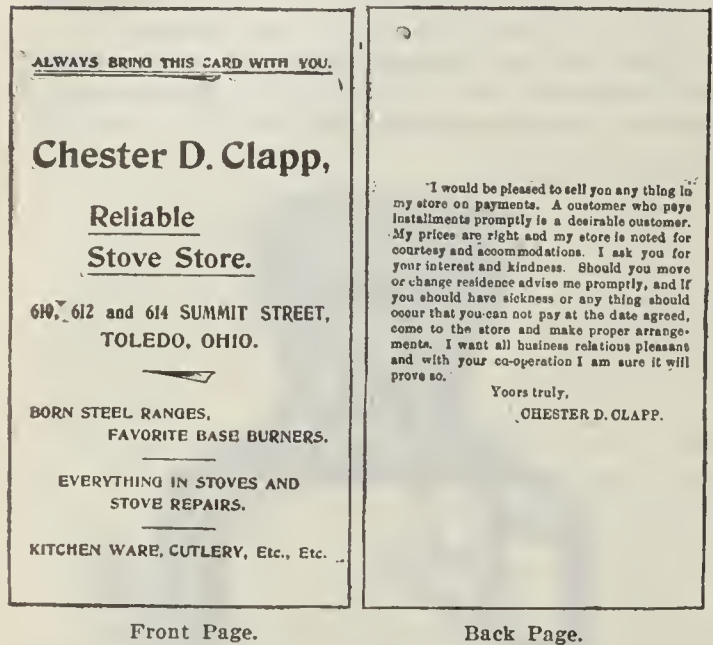
to stand hard usage. We are advised that some of the machines have been tested 18 months in hotels and large kitchens, the device being the idea of a practical hotel man.

THE CLARK NOVELTY COMPANY, Rochester, N. Y., are mailing to the trade an attractive booklet showing many sizes and styles of their Brass Faucets for milk cans, cream separators, water coolers and oil cans. The company have gained an excellent reputation during the past 12 years as manufacturers of this particular line of

goods. They state, as a gratifying fact, that during the past season they have not received one word of complaint in regard to these goods from any of their hundreds of customers. The growth of this branch of their business has compelled the concern to devise several special machines and tools especially adapted for the finishing and grinding of Brass Faucets. The improved facilities thus provided enable the company to turn out a large quantity of goods of the highest quality. They invite those who use or handle Brass Faucets of any kind to communicate with them before closing their contracts for the coming season.

CREDIT SALES AND COLLECTION OF ACCOUNTS.

Merchants not infrequently look upon the credit part of their business as undesirable, if not an evil which they prefer to avoid. To desire and encourage such trade is unusual. Chester D. Clapp of Toledo, Ohio, looks at the matter in another light, and is doing a large credit business with satisfactory results. A considerable portion of the business is done on the installment or



Front Page. Back Page.

Fig. 1.—Folding Card for Credit Sales.

easy payment plan. This plan covers Stoves, Washing Machines, Wringers, Tools, &c., and he has sold Christmas gifts on payments. Mr. Clapp expresses the opinion that the majority of all Stoves are now being sold in this way. The average furniture dealer is referred to as charging \$45 to \$50 for the same size and style of Range that the average Hardware and Stove dealer sells for \$40, yet the furniture man makes the greatest number of sales.

The folding card, the front and back pages of which are shown in Fig. 1, reduced in size, has been found con-

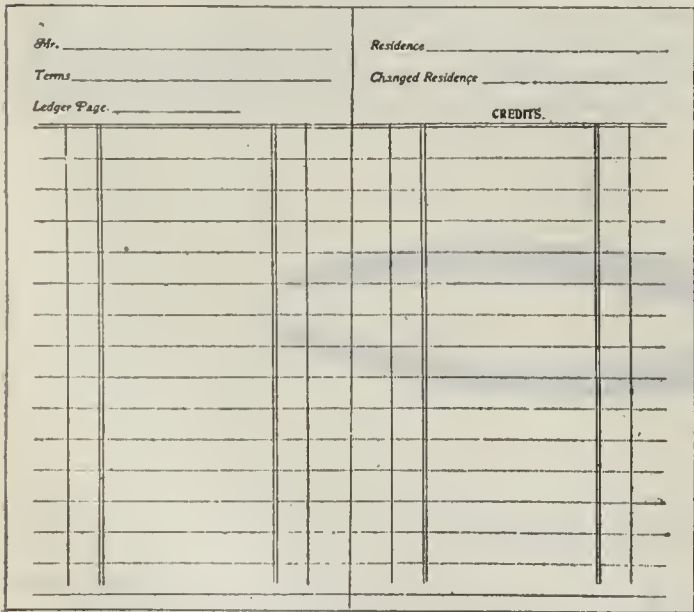


Fig. 2.—Inside Pages of Folding Card. Actual Size 6¼ x 5½ Inches.

venient and practical to use when merchandise of any kind is sold on payments or credit. It is 6¼ inches wide by 5½ inches long, printed on good stiff manila paper, made to fold in the center. The printed matter on the back cover is in a courteous form, to convey to the credit customer the idea that his trade is not only sought after, but that it is valued as much as that of cash customers.

The inside pages, reduced in size in Fig. 2, are arranged with the proper spaces for entering the goods sold, and the credits as payments are made. The customer retains this card. It has been found that the card answers its purpose much better than the ordinary bill or statement of account; that it will stand more wear and tear; that it gives a better opportunity to display advertising matter conspicuously; that the notice regarding payments is read and complied with more readily than the abrupt demand written in red ink, which usually appears on the statement of account, and that it tends to make customers more frank in their dealings with the merchant.

The Tickler, illustrated in Fig. 3, reduced in size, is used in connection with the sale of goods on payments, or in the collection of delinquent accounts. This card is made of somewhat heavier manila stock than the one shown in Fig. 1. It is 3¾ inches wide by 8½ inches long. In connection with the Ticklers a cabinet is used, having 31 compartments, each compartment representing a day of the month. Each Tickler used contains a full statement of a customer's account, posted up promptly as payments are made. Each Tickler is placed in the compartment representing the day of the month when payment is promised or expected, and moved from one date to another as necessity requires. For instance, the Tickler of a customer who pays promptly on the 10th of each month is never disturbed; but, if tardy, and he promises

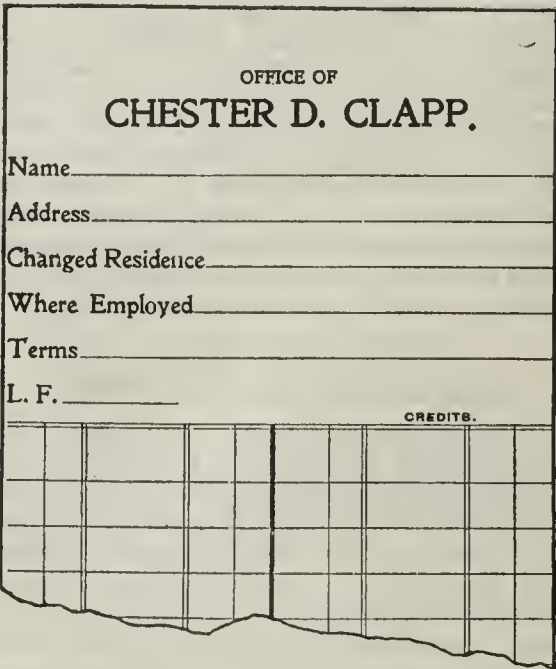


Fig. 3.—Tickler. Actual Size 3¾ x 8½ Inches.

to pay on the 20th or 25th, his Tickler is moved forward to that date. If wholly delinquent, the Tickler is taken from the cabinet and is kept with others for prompt adjustment in some way. The collector takes the Ticklers when making his calls for payment, a record being kept at the office of any Ticklers taken away for such purpose. The ledger account is kept up as well as the cards. Among the advantages of the system are the following: That the system is simple; that it saves making out so many statements; that promises made the merchant are before him each day, and that the Tickler containing the entire account is portable and can be changed from cabinet to desk, given to collector, &c., with greater facility than memoranda.

Mr. Clapp advises merchants to pay less attention to selling Wire, Nails, Poultry Netting, also to soliciting contractors' and manufacturers' trade, and cultivate the profitable household trade with the same weapons that are being used by merchants in other lines. He remarks that the average John marries his Emma with \$100 to his account in the bank, and needs \$200 to \$300 worth of goods to begin housekeeping. He adds, such accounts are seldom found to be delinquent, but are paid as agreed upon, and more goods bought. The opinion is expressed that this system of doing business will pay, no matter how small the town.

The American Aluminum Association.

At a meeting of thirteen representatives of firms manufacturing or dealing in aluminum goods held last month at the Genesee Hotel, Buffalo, N. Y., an organization was formed under the name of the American Aluminum Association. The object of the association is to improve the condition of the aluminum industry and to promote a more friendly feeling among the different concerns engaged in it. The following officers were elected to serve until the first annual meeting of the association:

President, Joseph A. Steiunetz of Janney, Steinmetz & Co., Philadelphia.

First Vice-President, W. F. Pfueger of the Manitowoc Aluminum Novelty Company, Manitowoc, Wis.

Second Vice-President, W. H. Wagner of the Wagner Mfg. Company, Sidney, Ohio.

Secretary-Treasurer, Palmer H. Langdon, New York.

Committees were appointed to deal with the subjects of Metallurgy, Novelties, Cooking Utensils, Combs and Dealers, and an interesting and fruitful discussion on trade topics was held. The necessity of manufacturing goods of the best quality and of maintaining fair prices was particularly insisted upon. No agreement on prices was made at the meeting, but a general understanding was arrived at that they would be maintained at a reasonable figure to insure fair profits. Several concerns that were not represented at the meeting have since joined the association, which includes in its membership nearly all the leading firms engaged in the aluminum trade.

Dietz Lanterns.

For over 60 years the name of Dietz has been connected with lanterns, the business of the R. E. Dietz Company of New York having been established as far back as 1840. The company have just published a 64-page catalogue covering some of the many styles of Dietz tubular lamps and lanterns manufactured by them. The catalogue, which is of small and convenient size, gives a cut of the factory of the concern in New York City, which is claimed to be the largest establishment of its kind in the world. A view is also given of their factory at Syracuse, N. Y., formerly the works of the Steam Gauge & Lantern Company. Hand lanterns of all kinds, bracket lanterns, street lamps, driving lamps, automobile lamps, bicycle lamps, locomotive head lights, and commercial, railway and other lanterns are included in the assortment presented in this publication. In a preface the company lay special emphasis upon the absolute safety of their lanterns. The oil pots of all the Dietz tubular lanterns are said to be drawn out from a solid sheet of tin and the bottom plate set in. This method of manufacture, it is said, insures their lasting quality. All the material used in the manufacture of the goods is of the highest quality. The burners are stiff and strong, and the globes are of extra grade, made from the company's own molds, to fit the lanterns. The goods shown in the present catalogue cover a very wide range, from the largest locomotive headlight to tiny Baby brass lantern, which is said to be the smallest lantern made.

Wagner Hollow Ware.

The Wagner Mfg. Company of Sidney, Ohio, have just issued an attractively gotten up catalogue of 72 pages, covering the line of high grade iron and aluminum hollow ware of which they are the manufacturers. The book is bound in gray covers, with black and silver ornamentation and lettering, and is known as Catalogue No. 10. Views of the company's two factories are represented on the opening page. The introduction states that in addition to these, two new buildings are rapidly being erected—one for the production of the company's new aluminum goods, the other being a large and commodious office to take care of their increasing business. Illustrations of the medals awarded to Wagner hollow

ware at the World's Fair at Chicago, the Paris International Exposition of 1900, and the Nashville Centennial Exposition, together with a view of the company's elaborate exhibit at the Pau-American Exposition at Buffalo, occupy the following pages.

Fifteen pages are devoted to aluminum ware, embracing tea kettles, pudding pans, sauce pans, skillets, broilers, dippers, ladles, cups, scoops, funnels, and a number of other articles, also cast aluminum letters and numbers, of which the concern make a large variety. Wagner nickel plated ware is shown in eight pages. These comprise skillets, kettles, griddles, cooking pots, Dutch ovens and tea kettles. In order to increase the sale of their nickel plated ware and to give the dealer an opportunity of displaying it to more advantage, the company offer to give free a handsome display rack in white nickel finish. A variety of polished ware occupies a number of pages, followed by ordinary hollow ware, the latter including a number of specialties such as the Wagner improved boiler and the Wagner ball bearing waffle iron. The closing pages of the catalogue show a variety of goods, including stove lids, stove leg rests, stove lifters, coal grates and ventilator grates, cylinder rings, sugar kettles, ash doors and frames, street and gutter crossings, gas burners, tuyere irons, cast iron water conductors, sash weights and other cast iron goods.

Stove and Hardware Dealers.

HERMAN MOLLENHAUER has opened a new Hardware and House Furnishing Goods store at Yorktown, Texas.

AN artistically gotten up booklet is being distributed by the R. E. Dietz Company, 60 Lighthouse street, New York, advertising the Dietz New Steel Signal Lamps, that are claimed to be among the strongest, most compact and thoroughly up to date Signal Lamps made. Illustrations of the Lamps are presented, some of which are in colors, showing the green and red lenses used for signal purposes.

N. P. WILD has bought the Hardware and Tinware business of the late Daniel Palmer, at Valatie, N. Y.

A. C. L. WUNDER has started in the retail Hardware, Tinware and Stove business, at Walcott, Idaho.

At the convention of the National Hardware Association in Cleveland, Ohio, last week, the Dover Mfg. Company of Canal Dover, Ohio, presented the delegates and visitors with a miniature Sad Iron as a souvenir of the occasion.

THE MICHIGAN HARDWARE MFG. COMPANY, Grand Rapids, Mich., have issued a catalogue of Stove Boards, Sheet Metal Ceiling and the improved Gem Hose Plier. The company's new crystallized metal covered Stove Boards are manufactured with the edges on the underside of the base forced into the wood in such a manner as to avert all danger of projecting outward and becoming entangled with carpet or rugs or severing the covering of the base or wooden bottom. The catalogue illustrates a variety of the designs which have been originated by this company. The Metal Ceilings shown are also of original and pleasing designs. The Gem Hose Plier is designed for coupling and mending Garden Hose, and is a very ingenious tool, embodying a number of features which make it especially valuable in this line.

E. M. Lang, senior member of the firm of E. M. Lang & Son, solder manufacturers, of Portland, Maine, died October 9 at his home in Falmouth, Maine, after a short illness. Mr. Lang was one of the pioneers in the can business of the United States, in which he was engaged about 40 years ago. Later he branched off into the manufacture of solder on an extensive scale and established one of the largest businesses in this line in the United States. Mr. Lang was 68 years of age, and was one of the most prominent and respected citizens of Portland. He leaves a widow and five children. One of his sons, E. M. Lang, Jr., is the treasurer of the solder firm.

VENTILATION AND HEATING OF BUILDINGS.*

The problem of how to heat economically and yet efficiently has been and is both a complicated and difficult one, owing to the many circumstances of latitude, exposure, nature of employment of inmates, number of occupants of dwelling, and so on, and yet there are some primary principles which must be fully understood if even a moderate degree of success is to be attained. I shall attempt to outline these in order of importance as they appeal to me.

Owing to the constant atmospheric movements of external air it must be remembered that the external air is, even in cities, infinitely purer than the best house air under ordinary conditions. For instance, Dr. Paul Regnard quotes a table from Miquel giving the bacteria per cubic meter in air as follows:

Bacteria in Air.

Air over the Atlantic.....	0.6
Air of Paris at summit of Panthéon.....	1,200
Air of Paris in Rue de Rivoli.....	3,480
Air of Paris in a new house.....	4,500
Air of Paris in the sewers.....	6,000
Air of Paris in an old house.....	36,000
Air of Paris in the Hôpital de la Pitié.....	79,000

Or, as Regnard says, a patient in La Pitié inhales 790,000 bacteria daily.

As regards chemical constituents, Dr. Angus Smlth, Saussure, Muntz and others have found that the carbonic acid of the purest and most impure outer air does not vary more than between 2 and 4 parts in 10,000, whether on mountain top or in the slums of great cities. To illustrate further, Pasteur and Tyndall both found that sterilized solutions of beef bouillon could not be exposed a moment in a room without danger of infection by some floating microbe, while on the mountains outer air was practically sterile. Clearly, then, our problem involves the introduction into houses or living rooms of a reasonable amount of outer air, if we believe that fresh air is necessary to health. Now it is quite apparent that we are at once confronted with the question of how to do it, and how to pay for it. After much consideration I am convinced that it is possible, with reasonable economy to keep house air fresh, but only by an appreciation of the several physical laws entering into the problem.

First, the construction of a warm building—this is our first point. But, some one says, here again it is a matter of cost. Partly so, and only partly so. Practically we have three building materials—stone, brick and wood. Speaking of refrigerating machines, Leask remarks that a large percentage of the actual work done is required to make up for the transfer of heat through the walls, floors and ceilings occasioned by poor insulation, which amount may be measured experimentally. Tables are given as illustrating the varying conducting powers of substances. Professor Shaw of Cambridge indeed gives a formula for estimating the amount of heat lost in one hour by conduction through an area of 1 foot square of different substances of 1 inch in thickness, with a difference on the two sides of from 1 per cent. upward.

Conducting Properties of Materials.

	Units.		Units.
Copper conducts.....	3,225.0	Cork	0.90
Iron	477.0	Water	5.82
Stone.....	17.9	Air	0.16
Brick	4.3	Glass	6.66
Oak (across fiber)...	1.70	Slag wool.....	0.314
Brick dust.....	1.00	Asbestos	Same as above.
Coke	0.99	Paper	0.20

It is thus apparent that enormous differences exist in the conducting powers of our several building materials, and that very important facts regarding the conducting powers of other substances may become of practical service to us under many circumstances. Thus Leask gives several examples, of which the following illustrates the successful arrangement for a refrigerator wall:

Outer wall, 14 inches of brick.
Next inner wall, 4 inches of pitch and ashes.
Next inner wall, 4 inches of brick.

Next inner wall, 4 inches of air space.
Next inner wall, 14 inches of brick.

But assuming that we are to build an ordinary 14-foot wall, we must see that two points are well attended to (a) that the mortar is laid so that the wall is not a sieve, and (b) that its inner surface is grouted and a good striping is laid on tar paper, with an air space between this and the plaster, and thereby get at least some of the non-conducting conditions we are seeking.

But the question will be asked, what difference can the wall make if the air is to be frequently changed?

ONE RESULT OF FREQUENT CHANGE OF AIR.

An example will probably best illustrate the case. Assume a room with two outer walls of 30 feet each by 16 feet in height and 1 foot in thickness. This represents 900 square feet of external radiating surface. Assume that 1 inch thick with 1 degree of difference between outer and inner air means in heat a loss of 4 heat units, one-twelfth of this is lost with a foot in thickness, or 300 heat units per hour. Let the difference in temperature be between 60 degrees F. and zero, and not only will there be a loss of 60 times as many units of heat, but the rate of loss of heat is directly proportional in rapidity to the difference between the internal and external temperature. But assuming that this most important matter of making a building warm, compatible with moderate first cost, is accomplished, we have still the problem of heating. It is apparent that houses, essentially dwellings, must most concern us. Warehouses and similar large buildings are usually filled with goods, rather than people, but schools, workrooms and factories, as well as dwellings, must claim our attention.

It has always appeared to me that the large building with many inmates is our simplest problem, since the means applied may be mechanical, and caretakers may be provided to supervise such. But I think it will be common experience when I say that the idea of introducing adequate air while installing our heating apparatus has hitherto been given relatively little thought.

Take the heating of a school or church, for instance, and we have hot air furnaces, steam and hot water to choose from. Suppose it to be a hot air furnace which is chosen. Air is introduced into a schoolroom at from 100 to 150 degrees F. at a single point, with its moisture reduced by expansion of the air to perhaps 10 per cent. or less of relative humidity. It is delivered at one point, often creating a draft, and a chimney register of a few square inches is usually the only exit. Analysis shows the carbonic acid relatively in excess. Windows, if open, again subject the inmates to the danger from draft and so are only occasionally opened. If the heating be steam we have heat alternately in excess and defect, while the likelihood of getting a fair amount of moisture into the room and a fair degree of purity is seemingly very slight. In the case of hot water heating we have in the regulation of the degree of heat in the rooms many advantages, but in the matter of air purity the same problem of how to maintain a reasonable purity of air is quite as prominent as in the case of steam. In both cases it is not uncommon to have fire places in rooms, and in such instances a fair degree of purity is naturally maintained by the chimney shaft, greatly increased, of course, if a fire is kept in the grate, although the air near the floor is relatively cold in consequence of the draft from beneath doors leading to cold halls and the outer atmosphere.

A PURER ATMOSPHERE ATTAINABLE.

The question, therefore, before us is: Can we, with the ordinary means at our command, improve the air conditions in the living rooms of public or private dwellings without an increased expense? I believe that we can, and I propose to deal with some of the methods and explain the reasons for my opinion.

Suppose that we have to deal with an ordinary school building. What methods should we pursue to effect the desired end? I shall assume that the walls have been made in a large degree non-conducting. In a school building of four rooms, each providing for 50 pupils, and giving 240 cubic feet, or 4 x 4 x 15 feet to each, it is

* Paper read by Dr G. H. Bryce at the convention of the Ontario Association of Architects

found that 2000 cubic feet per pupil per hour will keep the carbonic acid at six parts per 10,000. In order to supply this, 100,000 cubic feet of air per hour must pass into each room whose cubic capacity is 12,000 feet. This means eight and one-third changes per hour. To supply this an inlet shaft 2 x 2½ feet is required, which delivers air at 694 feet per second. It is found that air coming into the room at this rate at a point above the head, say, 7 feet from the floor, with the mouth of the delivery duct at an angle of 45 degrees, will cause the air to distribute rapidly laterally, while the *vis à tergo*, or head, and the temperature at, say, 80 degrees F., will cause the air to rise and be propelled across the room, where, reaching outer walls, it will be cooled and descend and return at a rate not exceeding 2 feet per second along the floor toward an exit shaft, which should be at the floor near the inlet. To favor even distribution the windows should be double and the walls nonconducting as far as practicable. In order that this work be done the air must be previously warmed in the cold air room of the basement, and forced into the shaft by a fan or drawn in by heated extract shaft.

THE NEED OF MOISTURE IN THE AIR SUPPLIED.

The method provides a very important means of supplying outer air as it is warmed, with an opportunity of receiving moisture in the cold air room from broad and shallow evaporating pans supplied with water automatically by a ball float and valve. To illustrate the importance of this point some figures may be given. It will be remembered that as air expands with heat its capacity for moisture increases. The percentages of moisture at different temperatures have been calculated. Thus at

Degrees.	Per cent.
0 Fahrenheit.....	Moisture 0.09
32 Fahrenheit.....	Moisture 0.37
42 Fahrenheit.....	Moisture 0.56
52 Fahrenheit.....	Moisture 0.81
62 Fahrenheit.....	Moisture 1.17
72 Fahrenheit.....	Moisture 1.68
82 Fahrenheit.....	Moisture 2.36
92 Fahrenheit.....	Moisture 3.28
102 Fahrenheit.....	Moisture 4.54

Thus the relative humidity of air more than doubles with every 20 degrees, proportionately increasing with increasing temperature. Now, it will be further noted that air in motion practically never becomes saturated as it passes over moist surfaces, but takes up probably 75 per cent. of saturation. Hence, outer air at 0 degree going into a room, we shall say at 90 degrees, will at 75 per cent. of saturation have taken up ten grains of vapor, or it will hold 30 times as much moisture as that in outer air at zero. In other words, the 100,000 cubic feet of air hourly introduced into a school room should be supplied with 1,000,000 grains of water as vapor, or it would actually take up through evaporation 13 gallons of water hourly. As, however, the moisture from the breath of children yields a very notable amount of moisture, we may say 10 gallons of water ought to be provided hourly. This amount seems enormous, and would seem to actually use up heat. But the heat is never lost, it is only latent, and the service rendered by the moisture is apparent. If the air goes into the room too dry, and I am informed by Mr. Stupart of the observatory the air of the house heated by an ordinary hot air furnace has a relative humidity of not more than 25 to 35 per cent., even with a good evaporating pot, it is apparent that the air must from every available source in the school room seek its moisture. This it gets from the walls and furniture, but especially from the mucus membrane and skin of pupils. Now, assume that this 100,000 feet of dry air becomes even partially saturated, and I have found it in a school room heated with a Smead Dowd furnace at 50 per cent. of saturation, it is apparent that it will in an hour have removed a large amount of moisture from the bodies of the pupils. But to evaporate 1 pound of water requires nearly 1000 units of heat, and hence it is apparent that even if 2 pounds of water were given off by the breath and bodies of 50 pupils per hour 2000 heat units would be utilized. But very much more is lost by insensible perspiration.

THE EFFECT OF DRY AIR.

Now the practical point is this, that since the body temperature is 98.4 degrees F., it is apparent that the air of a room does not warm the body, but only prevents the loss of heat aided by clothing with too great rapidity, and as evaporation produces cold the lower the air is the more rapid the loss of heat by evaporation, and hence the constant experience that in rooms with dry air a temperature of 70 to 75 degrees is required to prevent a sensation of cold, whereas if the air held more vapor much less loss of heat would take place by evaporation and the sensation of cold at 60 degrees F. would not be as great as in the other case at 70 or 75 degrees. Indeed, we all know that in English text books a temperature of 60 degrees F. with the common fire place of that country is set down as a normal house temperature, due to the moist air constantly brought into the room by the draft. I have dwelt upon this point at some length because I am convinced that more injury is being caused by the abnormally dry atmosphere of our houses than from any other cause.

This matter of reducing the temperature of a living room further bears a very important influence upon the question of economy in heating. If we assume that outer air brought into a cold air chamber is at 15 degrees F., then it will require every hour in the school-room referred to some 10,000 heat units to raise it to 70 degrees F., or 55 degrees, or nearly 25 per cent. more fuel is required than is necessary to raise the air to 60 degrees if the heat rendered latent by evaporation be not considered. As some 35 pounds of coal per hour, with a loss of 20 per cent. by the chimney, is theoretically required to heat a room up to 70 degrees under the conditions we have assumed, it is apparent that the matter is a most important one for consideration

RADIANT HEAT.

In this connection it seems of importance to refer to the part played by radiant heat as an adjunct to room heating. All are aware of the effects of the heat from a grate, but we are not so conscious of the effects of the heat radiated from steam and hot water pipes. We speak of heat waves and are aware of how relatively different are different liquids, solids and gases in their power to absorb rays of heat, and that among gases the oxygen and nitrogen of the air are nonabsorbers of heat, whereas, as Tyndall informs us, the absorption of heat waves by water vapor is the chief agent in preventing the earth from becoming barren from the loss of heat absorbed by the earth during the day. Probably from 10 to 15 per cent. of the heat radiated from the earth is absorbed by the water vapor within 10 or 20 feet of the earth's surface. Such air, too, plays an important part in the absorption of heat in the air of a room when the air has its proper amount of moisture, while, further, the penetrating powers of the heat rays from radiators and grate fires by which the bodies of occupants are warmed are well known. Another point of importance in this connection is the fact that a white wall reflects the heat to a much greater degree than dark walls, although not absorbing heat readily itself, and the black steam pipes are much better radiators than if painted white.

We have dealt with some of the physical laws entering into the conditions affecting the heating of the air of rooms, but I have frequently thought that the construction of our houses, which usually have open stairways on three stories, might be dealt with in a much more economical manner than is usually practiced. Most of us know that in a single room, say on the ground floor, the heat near the ceiling is 10 to 15 degrees higher than at the floor, and for the same reasons the air of the lower floors constantly ascends as by a funnel to the upper rooms. In such cases the remedy applied usually is to have a hot air register or a hot water radiator in each room.

EXHAUSTING FOUL AIR.

Some of our economy hot air furnace manufacturers have, however, seized upon a familiar fact—namely, that by drawing off the air at the floor by a down draft shaft leading to the warm air chamber around the fur-

nace not only is the air led more equably in each room, but the warm air is kept near the floor of the room—and they have with much success solved the problem of equal distribution of heat and economy in the use of fuel. The fatal defect in the system is that they are reheating the air already breathed and violating the very first principles of introducing pure air by a fresh air duct in the living rooms. Now it appears to me that we may make use of the principle of maintaining an equable distribution of heat in the manner referred to, while at the same time utilizing the fresh air shaft by arranging floor ducts so as to lead the foul air from the room into the ash pit of the furnace, with a damper which will turn this foul air into the smoke flue as a check draft in mild weather.

With regard to the question of moisture, not only can a series of shallow pans in the heating chamber of a hot air furnace be supplied, but evaporating pans under each register may with advantage be utilized for still further supplying moisture to air which is abnormally dry.

But dealing with the problem as regards the most practical method of heating a private house and at the same time supplying fresh air, there would seem to be no question but that the heating with hot water most completely supplies the several requirements. In the sleeping rooms radiators may be placed, while the window is drawn down, and a draft prevented by a drawn blind fulfills every requirement. For the living rooms each should be supplied with a radiator, while fresh air would be brought into a cold air room in which a series of radiators over which shallow pans are placed with an automatic supply of water, while there will be delivered by the indirect method an ample supply of fresh warm air with adequate moisture for maintaining the air of the room at a normal humidity.

STEAM HEATING SYSTEMS.

The question of steam heating for large buildings naturally must be considered, and in the matter of economy of installation leaves little to be desired. But except as a means of heating fresh air to be supplied by ducts with a fan, it presents all the difficulties of lack of ventilation and dryness of air which have been already referred to. When thus utilized with small radiators in rooms as supplementary heating in very cold weather, it probably is the most readily applicable of all methods. But the disadvantages of heating houses by radiators are numerous, and cannot be said to be a desirable method of heating, while defective in the total absence of adequate ventilation and supply of moisture. Equability of temperature is not possible, while the cracking due to condensed steam is most undesirable. Probably the ideal method of heating such large buildings is that where steam pipes are used for heating cold air to be delivered by fans with adequate exit shafts, while the steam is carried to coils placed in tanks of water at convenient points for each suite of rooms, from which hot water pipes are carried to the coils or radiators which heat the several rooms as a supplementary means of heating. I have, however, referred to some of the many difficulties no doubt experienced by all and have touched upon some of the possible remedies. One, however, must recognize the difficulties of having remedies applied. In too many cases we have to take what is in the market, and as I witnessed last year in some specifications for school buildings, the details were left so indefinite that it seemed likely to become a question of what furnace manufacturer could satisfy a trustee that he could get enough of heat into the building, and not whether they would be ventilated when heated. It does seem very essential that at any rate in public buildings not only should there be laws defining certain necessary conditions before school buildings, &c., could be constructed, but that, as in Massachusetts, inspectors should be employed to examine the proposed methods of heating before they be installed.

WILLIAM G. SEARS & Co., Providence, R. I., have the contract for a steam heating plant in the Westminster Hotel, in that city.

Plumbing and Sanitary Appliances in Southern France.

Modern improvements are being introduced into buildings in this consular district, says Attilio Piatti, acting United States Consul at Nice, France, and I am of the opinion that the use of sanitary appliances will assume large proportions in the next few years, and that our manufacturers should seek to enter this field. The system of supplying hot water throughout houses has not yet been adopted here, but detached water heaters are largely used. A gentleman to whom I described our kitchen ranges supplying hot water would have placed them in all the apartments of a large, new building, had he been able to find them on the spot.

Considerable quantities of these goods have been imported from England; up to the present, the sales of German firms have consisted principally of brass cocks and faucets and of plain zinc baths. I am informed that the latter may be had here at about 20 francs (\$3.86) less than the French article, and of better workmanship.

The following prices are paid by plumbers for the articles mentioned:

Articles.	Prices paid by plumbers	Custom house duties per 220.46 pounds	Municipal tax per 220.46 pounds.
Water heaters, gas (of copper), each	\$36.67	\$9.60 net weight	Free.
Baths, cast iron (interior enamel), each	\$30.40 to 49.90	\$2.90 net weight*	Free.
Cabinet bowls:			
Half porcelain, colored, each	4.25 to 8.50	\$2.40 to \$5.80, ranging from plain white to colored or decorated, gross weight.	\$0.60
All porcelain (one piece):			
White, each	6.20 to 11.60		.60
Colored, each	14.50		.60
Sitz baths, all porcelain, colored, each	44.50		Free.
Lavatories, each	34.75 to 115.80		Free.
Cast iron water tanks, each	3.50 to 7.75	\$0.66 gross weight...	....
Copper tubes, plain, (diameter, 1 5/8 to 1 7/8 inches), per 20 3/4 inches		1.35 \$5.79 net weight,...	.60
Lead Pipe:			
Diameter, 0.78 inch upward, per 220.46 pounds	10.25	\$1.54 gross weight...	.60
Diameter, up to 0.8 inch, per 220.46 pounds..	11.60	\$1.54 gross weight, weighing over 22 pounds, rough.	.60
Brass water cocks, each..	.75	\$4.82 net; finished, \$.80 net.	.60
	.85	weighing under 22 pounds, rough	.60
	1.10	\$3.86 net; finished, \$9.65 net	.60
Toilet water cocks:			
Nickel, each	1.60 to 3.00	\$28.95 + .....	.60
Nickel, double movement, each	2.35 to 4.85	\$28.95.....	.60

NOTE.—Goods not coming direct from the United States pay an additional duty of 70 cents per 220.46 pounds.
* Same duty if enameled inside and outside.
† All nickel works pays this duty. If parts are not detachable, whole weight pays this duty.

It will be seen that nickel goods pay a very high duty, and that nondetachable parts subject the entire article to the same duty. Our manufacturers should therefore nickel only such parts as may be detached and weighed separately. It costs about 25 cents here per running foot to nickel copper tubing, such as is mentioned in the table. I have seen but one nickel copper bath here, and the price to a plumber was \$130. I have not been able to ascertain the German price for ordinary zinc baths, the few plumbers buying them apparently desiring to keep it secret. But an ordinary zinc bath, uncouth in appearance, made on the spot, will cost not less than \$20.

The high prices charged up to the present for the most elementary sanitary appliances have been the cause of the limited consumption. The general public has no conception of the beauty, lightness and durability of our manufactures in this line, and, once known, our goods should compete most successfully with all others. Manufacturers of standard lines or of specialties should find a reliable agent to handle their goods and ship them direct, thus avoiding freight charges, middlemen's profit and commissions. Where possible, a certain credit should be given. In one case a German firm gave a plumber one year's credit on a bill of brass

cocks and toilet faucets. He now purchases all this line of goods in Germany.

I have endeavored in this report to indicate on large lines the state of this trade. Should any firm require more detailed or more technical information, I shall be glad to furnish it.

PRESENTATION TO EX-PRESIDENT TIERNEY.

It has been the custom of the National Association of Master Plumbers, at the close of the term of the president, for the newly elected president to appoint a committee to procure and present to the retiring president a suitable mark of esteem in recognition of the services he has rendered. At the Kansas City convention President E. D. Hornbrook appointed James C. Conroy and Job S. Fuller of Providence, and Edward J. Hannan of Washington, D. C., a committee to attend to this pleasant duty. The meeting of the Providence Association of Master Plumbers, held in Providence, R. I., on October 3, was made the occasion for this committee to discharge their duties. The committee selected an imported watch of a celebrated make and supplemented it with a handsome solid gold chain, to which was attached an especially designed charm emblematic of the plumbers' craft.

The presentation speech was made by James C. Conroy, who was secretary of the National Association during Ex-President Tierney's administration. In his speech he referred to the untiring zeal with which Mr. Tierney discharged his duties, and to the heroic sacrifices made by him in answering the calls of his office in spite of ill health. After Mr. Tierney had made a brief and graceful speech of acceptance, he was overwhelmed by congratulations from his many friends. A letter was read from E. J. Hannan, expressing his regret at his enforced absence and adding his testimony to the high esteem in which Mr. Tierney is held by master plumbers throughout the United States.

Quarterly Meeting of the Master Plumbers' National Executive Committee.

The Executive Committee of the National Association of Master Plumbers held their quarterly meeting at the Garlock Hotel, Cleveland, Ohio, on Monday and Tuesday, October 7 and 8. The meeting was presided over by President E. D. Hornbrook of Kansas City, Mo. Among those present were Vice-President Charles Polacheck of Milwaukee, Treasurer W. E. Goodman of Milwaukee, Secretary George Kirtley of Kansas City, ex-President Patrick Tierney of Providence, R. I.; W. B. Coffee of Tacoma, Wash.; T. J. Young of Mobile, Ala.; Frank Fox, Jr., of Chattanooga, Tenn.; H. Highlands of Muncie, Ind.; George Kirkhoff of Indianapolis, Ind.; C. C. Breyer of Chicago, Ill.; Joseph A. Weldon of Pittsburgh, Pa., and E. J. Hickey of Chicago, Ill. The Executive Committee were entertained at a reception tendered by the Master Plumbers' Association of Cleveland, at which refreshments were served and speeches made by both the hosts and their guests.

Gasoline Fire Pots and Torches.

Those who use gasoline fire pots and torches, whether tinnern, cornice makers, plumbers, painters, electricians or gas fitters, will find much to interest them in Catalogue A, issued by the Clayton & Lambert Mfg. Company of Detroit, Mich. The catalogue consists of 32 pages and opens with an introduction stating that the house began to manufacture articles of this character in 1889 and have since been studying how to produce the very best goods that material and workmanship can produce, designed with a special adaptation for the needs of the mechanic. They also point out that they have been enabled to make gasoline fires to do a great variety of work safely and have made these appliances indispensable to the expert mechanic. The first seven pages of the catalogue are devoted to fire pots for heating solder coppers and melting lead in the kettle and also adapted for braziers' use. Some are so constructed that

the upper portion can be removed, allowing the flame to be used as a torch. Three pages are occupied by special fire pots for plumbers' use. One cut shows high power apparatus made especially for braziers. A great variety of hand torches, adapted for various purposes, are presented and also an alcohol torch for gas fitters and other mechanics, as well as several styles of illuminating torches, some adapted for lighting workshops and foundries, and others of small capacity for carrying in the plumbers' tool kit for use instead of the inevitable candle. The last pages are devoted to illustrations of the various parts, with instructions for using repairs, together with a complete price-list.

Sharks in the Building Trade.

BY "R."

The article in *The Metal Worker* of September 14, entitled "Unfair Conditions of Specifications," covers more ground than steam and hot water specifications. It is applicable to every department of the building trade. A scoundrel, who, by hook or by crook, has obtained a parcel of ground determines to build, and that, too, with the premeditated design of robbing either the contractors, the building and loan people, or, as a *dernier resort*, the insurance company. There being more risk in the last case than in any other, of course, that is left as the final effort. Now after he—the owner—has decided to build he directs all his energy to finding an architect, who must fulfill certain requirements. For instance (I shall hereafter designate the architect as "he"), he must be a person who has no idea of honesty and has assurance in geometrical proportion to his ignorance; one who does not understand the meaning of the words he employs, has not the slightest idea regarding the technical terms he speaks of, and cannot conceive the difference between a Kelly stop and waste and a Mueller, and actually specifies that a Mueller stop and waste is to be set as follows (I quote from the specification before me): "Where place two ¾-inch Mueller stop and wastes so as to control all fixtures and train same for hot and cold water. Handles for same to be galvanized iron fastened to wall with brass screws and to be 2½ feet above floor close to boiler." I quote this literally to show how very little this style of architect knows. This clause was written for this so-called architect by a plumber, and barring "train" for "drain," and reading "Kelly" for "Mueller," it would be all right.

Of course, after "Owner-Thief" has secured the services of "Architect-Rogue," their first endeavor is to cajole some contractor on the fly—any bird of passage will do—persuade him that half the specifications will not be exacted; get a bond, usually a lumberman or so; quarrel, either direct or through the architect; insist upon an exact fulfillment "although such things may not be particularly mentioned," and force the contractor to a compromise. Then comes the turn of the building and loan association. The greater part of the work being done, as well as the poor devil of a contractor, and the work paid for at 33 cents on the dollar actual value, then the ever present "jackleg" is called upon, who does the job, the owner, the architect and the building and loan association, and this robber of thieves makes the greatest percentage of spoils after all—except the owner, who has built to burn, and even he has to share with the complaisant architect.

Now, the architects who know their profession do not and will not recognize these short change butchers, and no reputable architect will attempt to shield himself under and at the cost of a contractor. They are paid to know, theoretically, the requirements of a good job, and will carefully take into consideration all, even the minutest details. Then, should mistakes occur, as they will, the architect will act as a just judge and not as a partisan.

Now as to the remedy. Let the architects obtain authority in the various States to debar, not the rascals, for there will always be a few of those, but the incompetent professors. For, of necessity, the latter must belong to the criminal class eventually; they cannot get

work honestly and must resort to illegal means to obtain a living. Make it as great a crime to put up a sign "Architect" as it is to put up M. D., druggist or plumber without first having proved title to the satisfaction of their peers. The shyster architect is more dangerous than the shyster lawyer or quack doctor. Wipe out your dishonest architect and you will save 50 per cent. of the fire losses, 5 per cent. of lawsuits, and save some men from conviction as firebugs. Arson is a crime that originates in the office of the dishonest, incompetent architect.

A PLUMBING EPISODE.

In almost all large plumbing shops in the leading cities there is some old and experienced plumber, or some younger and intelligent plumber, who is sent to find the cause of troubles reported at the shop. A short time since an order was left with a New York City shop to send a man to find the cause of an "infernal racket" in the plumbing pipes in a Fifth avenue residence. The distinguished owner was at home at the time the plumber arrived and was smoking his pipe in his dressing gown as the artisan was ushered in.

Just as the two arrived at the point where the sound was most distinctly heard it was repeated so as to make the pipe rattle and cause a considerable noise. The owner exclaimed "There you have it." The plumber, with equal promptness, rejoined, "The noise is caused by nothing in this house." The owner said "What?" and glared at the plumber. The latter immediately explained that the cause of the trouble was about ten blocks away, and said that he had heard several complaints in the neighborhood and would go and try to discover the cause.

This information evidently struck the owner as a piece of glaring stupidity and the plumber was allowed to depart without comment. He found, about ten blocks distant, a large apartment house in which a suction tank between the street main and the pump used to fill the tank on the roof which supplied the building had broken down, and that the engineer of the apartment house was pumping directly from the street main through a by pass. At every stroke of the pump there was a cessation of pressure in the main, which extended into every building connected with it for some distance.

He suggested to the engineer that he shut down the pump for a short time at a given hour and went back to his original customer. Inviting him to come to the point where the noise was being repeated distinctly, he told him that at a certain time the noise would cease, explaining to him the cause and what arrangements he had made. As soon as the time mentioned was reached the engineer stopped his pump and the noise in the pipes ceased.

The plumber then took his departure, standing high in the estimation of the customer, who, it may be mentioned, is one of the popular authors of the day.

An Unusual Piece of Lead Work.

Clark Brothers, 218 South Twelfth street, Philadelphia, Pa., recently completed a notable piece of lead work at the new Philadelphia Mint. It was desired to provide a lawn at the front and side of the building, but a difficulty presented itself owing to the solid concrete and stone foundations of the Mint and the sidewalk around it. To overcome the difficulty two immense lead pans were built to hold the necessary earth. These pans were 18 inches deep and covered a space of 13,000 square feet, requiring 40 tons of 6-pound sheet lead, which was furnished by Tatham Brothers of Philadelphia, for the purpose. Some of the single sheets used were 41 feet long and weighed nearly a ton. All the joints between the sheets were made by the lead burning process, so that the completed work might be one solid bed of lead. In order that the earth in these mammoth lead pans might be moistened and drained, special drain pipes were connected at suitable points for the purpose.

An Ancient English Plumbers' Guild.

The charter of the Society of Plumbers, Pewterers and Glaziers of Newcastle-on-Tyne, says an English contemporary, is dated September 1, 1536. It enjoined them to go together on the feast of Corpus Christi and maintain their play of "The Three Kings of Coleyn," to have four wardens, who were to be sworn on admission not to interfere with each other's occupation; that no Scotchman born should be taken apprentice, or suffered to work in Newcastle, on pain of forfeiting 3 shillings 4 pence, one-half of which to go to the upholding of Tyne Bridge. On September 7, 1730, it was ordered that "no brother lend his diamond, except to a free brother of this company, on pain of forfeiting 6 shillings 8 pence." Their hall, anciently called Morden Tower, was granted to them in the mayoralty of Sir Peter Riddell, A. D., 1619. A gilded ball was suspended from the ceiling of this meeting room. It is conjectured that it had probably been shot from the cannon of the Scottish army during the great siege of the town in 1644, and, having lodged in the wall, was discovered on the alteration of the tower.

The Bailey Patent Pipe Couplings.

Owing to the ease with which a permanent joint can be made in connecting two pieces of lead pipe, or a lead pipe with iron pipe, by means of a special coupling, this method of connecting pipe has greatly increased in popularity. In the accompanying illustrations are shown

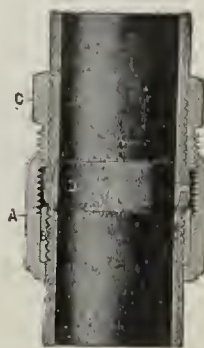


Fig. 1.—Coupling for Lead Pipe.

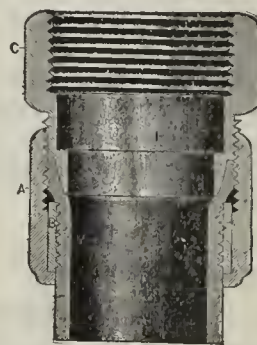


Fig. 2.—Coupling for Iron and Lead Pipe.

The Bailey Patent Pipe Couplings.

Bailey's patent lead pipe coupling and connections, manufactured by the J. & E. Stevens Company, Cromwell, Conn. Fig. 1 shows the coupling used for connecting lead pipes or other pipes of soft metal. The couplings are made for five different weights of lead pipe, from D to AA, and for all sizes of pipe from $\frac{3}{8}$ to $1\frac{1}{2}$ inches in diameter. In the sectional view it will be seen that the coupling consists of four parts. The ring B is threaded on the inside, to be screwed on to the end of the lead pipe. The nut C is screwed on to the end of the other piece of pipe. The expanding packing ring D is inserted in the end of these pipes after they have been slightly opened with any taper tool. The pipe connection is made by screwing up the shell A so as to draw the two ends of the pipe tightly together.

Fig. 2 is a sectional view of the coupling used for connecting soft metal pipes to iron pipes. The nut C in this instance is threaded to receive the iron pipe, and the tapering packing ring is made as a part of it. The ring and shell are exactly the same as when used in a lead to lead pipe connection. It is pointed out that in using this coupling no special tools are required, that an ordinary wrench is all that is necessary for making a tight connection, and the joint under test has shown that it will stand a greater pressure than the lead pipe itself. Another convenient feature which may be mentioned is that in case of stoppage in the pipe it is a simple matter to disconnect the coupling and then the pipe is accessible for the insertion of a rod or connection with a force pump. It is said that these couplings have stood a pressure of over 1400 pounds per square inch.

The couplings are also made of suitable size for tin lined lead and block tin pipe.

The company issue a ten-page catalogue showing in addition to the couplings fittings for connecting sink faucets and plugs for stopping the end of pipes. Full detailed explanations, with sizes and prices are given in the catalogue, which can be secured on application. The couplings will be found convenient for waterback connections and for connecting the water supply to heating apparatus.

Death of Dent Yates.

The plumbing trade throughout the United States will learn with regret of the death of Dent Yates, who was well known throughout the trade, not only for his humorous qualities but also for his warm hearted generosity and friendship. Mr. Yates died at his home, 3607 Central street, Kansas City, Mo., on October 9, from the effects of an operation for appendicitis. Mr. Yates was born in Lexington, Ky., in 1860, his parents being of English birth. After receiving a normal school education, Mr. Bates learned the plumbing trade. After completing his apprenticeship, having considerable talent for music, he spent three years on the operatic stage. In 1881, owing to an illness which impaired his voice, he returned to the plumbing trade. After working in a number of different cities for several years and gaining varied experience, Mr. Yates formed a partnership with James Hammick in Kansas City in 1891. Mr. Yates succeeded the firm after the first year. He was very popular in his adopted city and was a delightful entertainer, having the ability to sing many popular songs with good effect. In addition to a marked gift as a writer on trade subjects, he had considerable talent for writing songs. He was a member of St. Paul's Episcopal Church of Kansas City. Mr. Yates is survived by a wife and three children.

Freezing Out Bacteria.

Hitherto experience has tended to show that, except possibly by the employment of liquid air, bacteria do not lose their vitality in the severest possible cold, says *Fire and Water*, and that ice cut from a sewage infected river, or otherwise polluted lake or pond, was simply a lurking place for typhoid fever and kindred diseases. The Boston Board of Health, however, has relegated this theory to the limbo of extinct superstitions, and holds itself prepared to show that there is little danger from the use of such ice. These savants tell us that in ice frozen by natural means the bacteria are thrown out by the process of freezing, while in the case of artificial ice sterilization proves fatal to them. In the report recently published by Dr. H. Winslow Hill, director of the bacteriological laboratory of the Boston Board of Health, we read as follows:

If ice is formed by the ordinary process of freezing downward toward the bottom, the mere act of freezing itself results in a diminution, by physically throwing out the bacteria to the extent of 90 per cent., the remaining 10 per cent. being reduced in proportion to the contamination already given, and in two weeks the percentage remaining in the ice, as compared with the number in the water originally, would give nearly the same purification as that of filtered water. In three weeks the purification would be much greater. This shows that ice more than three weeks old is as sanitariously safe as a well filtered water supply.

That statement is dogmatic enough. Dr. Hill, however, is evidently not quite certain as to the exact truth of his dogma, and by adding a warning to the ice consumer, simply retreats from the position he has laid down as unassailable. That warning is conveyed in the following terms:

Notwithstanding all the factors of safety inherent in the ice itself, there can be no question that the safety is not absolute. It is possible for ice to convey typhoid fever, if it should be polluted with typhoid discharges. A water supply must, therefore, be infected within, at most, a month previous to the formation of ice in order that the ice then formed may contain any living organism.

But that gives away the whole case, so far, at least, as naturally frozen water is concerned, and leaves the matter still in doubt. It would, therefore, seem the safer plan to stick to the good old way of refusing to purchase any ice for domestic purposes which is not guaranteed to come from an unpolluted source. The condition which confronts us is the existence of both the possibility and the probability that freezing does not kill bacteria, and that ice taken from a polluted source has frequently been known to cause typhoid fever—so frequently, indeed, as to militate very strongly against the Bostonian theory. In the case of artificial ice, it may be different—must be, if the water so frozen is distilled before being subjected to the freezing process, or if it has been carefully purified by a process of filtration scientifically conducted. If there is any doubt about the latter, then similar caution must be used as to the purchase of any ice that does not come up to the requisite conditions of purity of source.

EDUCATION FOR PLUMBERS.

BY A PRACTITIONER.

The subject of educating plumbers along the line of the cost of doing business is one which I should like to see discussed in your columns. We have a large number of journeymen plumbers in our town, who have a kit of tools and keep what little stock they have in some cellar, and do "curb stone" plumbing. They do not keep their cellars open for the convenience of those who want to have jobbing done, so are under little expense. They are satisfied with day's wages in return for their work. This class of plumbers often fail to pay their material bills, and eventually drop out, only to be replaced by others of the same class. A plumber who conducts a respectable shop, with some one always in attendance, who keeps a horse and wagon, &c., cannot compete in prices with "curb stone" plumbers.

They also contract for cheap work, like flats for workmen. If they get a job for two or three blocks of this class of flats, they get the owner to guarantee the bills for material. Some supply houses cater to this class of trade. For such jobs they will buy a larger quantity of iron and lead pipe and cheap closet fixtures in a year than we will, and consequently buy it cheaper. They will work themselves, and hire two or three men to help them.

Plumbers in our position cannot work on a job themselves, but are obliged to devote their time to superintending jobs, and have to make enough out of their profits to support themselves and their shops. The plumbers who carry their offices in their hats or in their vest pockets are a menace to the man who conducts business in a businesslike way, because they need to be educated as to the expense of doing business. When we are figuring very closely, we add 10 per cent. to the cost of material, which we calculate will cover contingencies, and consider that it will represent the net cost of the job. If we expect to make a fair living profit on a job we add 25 per cent. to the cost of material.

We find the jobbing part of our business is the most profitable, and push that end of it rather than contract work, which we do not solicit. Our gross receipts are about equally divided between jobbing and contract work.

TIMOTHY McEVoy & SON, Buffalo, N. Y., have received from the Supreme Court a judgment for \$7,925.62 against the Pan-American Exposition Company for plumbing work. The judgment covers balances due on five bills the firm had against the company and the costs of the suit. One of the bills was \$5977 for plumbing materials sold and work performed. A second was for installing a steam heating plant in the greenhouse of the Horticulture Building; a third was for piping, fittings and fountain jets for the electric fountain in North Bay; a fourth for piping and fittings for the exhibits, boiler and power plant, and the fifth for heating apparatus in the office of the superintendent of the exposition grounds.

Official List of "Accredited Manufacturers of Plumbers' Brass Work."

Under date of October 12 the Manufacturers' Association of Brass and Iron, Steam, Gas and Water Work issued to the jobbing trade through their secretary, Wm. T. Doyle, a circular-letter, asking them to adopt a line of legislation furthering a "spirit of harmony" that should actuate all who are workers in the task of bettering trade conditions. Believing in the solidarity of interests of manufacturer and jobber, the association have acceded to such requests as have been made by the adoption of proper legislation, and have issued an official list of "Accredited Manufacturers of Plumbers' Brass Work." They promise the jobbers their friendly interest, and ask them to co-operate for the mutual benefit of all. Following is the list:

The Peck Bros. Company, New Haven, Conn.
 Peck Bros. Company and L. Wolff Mfg. Company, Chicago, Ill.
 H. Mueller Mfg. Company, Decatur, Ill.
 Edwardsville Brass Company, Edwardsville, Ill.
 Kinsey & Mahler Company, Peoria, Ill.
 P. Healy, Evansville, Ind.
 A. Y. McDonald & Morrison Mfg. Company, Dubuque, Iowa.
 Ahrens & Ott Mfg. Company, Louisville, Ky.
 Henry McShane & Co. and J. Registers' Sons Company, Baltimore, Md.
 Walworth Mfg. Company, Boston, Mass.
 Haydenville Company, Haydenville, Mass.
 Detroit Sanitary Supply Company and the McKee & Roberts Company, Detroit, Mich.
 National Brass & Metal Company, Minneapolis, Minn.
 Union Brass & Metal Company, St. Paul, Minn.
 Exeter Brass Works, Exeter, N. H.
 McNab & Harlin Mfg. Company, Paterson, N. J.
 Reid Brass Mfg. Company, Brooklyn, N. Y.
 The Eaton, Cole & Burnham Company, the Kelly & Jones Company, Mayor, Lane Company, and McNab & Harlin Mfg. Company, New York City.
 The Wm. Powell Company and the Queen City Brass & Iron Works, Cincinnati, Ohio.
 Cleveland Bronze & Brass Works, Glauber Brass Mfg. Company and the Ohio Brass & Iron Mfg. Company, Cleveland, Ohio.
 Columbus Brass Company, Columbus, Ohio.
 The Humphries Mfg. Company, Mansfield, Ohio.
 J. B. Campbell Brass Works and Hays Mfg. Company, Erie, Pa.
 Haines, Jones & Cadbury Company, H. Belfield & Co., Thomas Devlin & Co., Stanley G. Flagg & Co., and Charles Perkes, Philadelphia, Pa.
 Bailey-Farrell Mfg. Company, the Kelly & Jones Company, Standard Sanitary Mfg. Company, and the Oil Well Supply Company, Pittsburgh, Pa.
 Hoffman & Billings Mfg. Company, Milwaukee Brass Mfg. Company and Rundle-Spence Mfg. Company, Milwaukee, Wis.

New York City Notes.

The Greater New York Association, after its regular meeting last Monday afternoon at Stapleton, Borough of Richmond, resolved itself into a bowling tournament, wherein the Brooklyn branch covered itself with glory, defeating the teams from Manhattan, Richmond and Queens by large scores.

* * *

The Broux branch of the association has got itself established, and is in good working order. Additions to its membership are made at every meeting. The officers elected are: M. J. McDermott, president; Peter Schweeckert, vice-president; John V. McEvily, secretary; W. D. Clark, treasurer; D. L. Delaney, financial secretary; Otto J. Spahn, sergeant-at-arms. Applications for membership will be received by the secretary at his shop on Tremont and Arthur avenues.

* * *

The journeymen are still at odds among themselves, and the parent organization has taken a decisive stand by ordering its men out of shops where members of the other faction are also employed. Owing to the present scarcity of men this has caused some inconvenience, but it will possibly lead to a settlement of the trouble.

* * *

Many complaints are still being made about the delay in the inspection of the lines by the Building Department, especially in jobs where the plasterer is following on the heels of the plumber. Another cause of complaint is that the horizontal and vertical lines are

required to be tested at the same time, and this is frequently an impossibility, as often the cellar lines are put in and covered before the building is ready for vertical lines at all.

PROCEEDINGS OF THE PLUMBERS' NATIONAL CONVENTION.

The members of the National Association of Master Plumbers throughout the United States have received from President E. D. Hornbrook at the National headquarters, at Kansas City, Mo., the proceedings of the National convention, held in that city last June. The publication, consisting of 155 pages, is well printed on good paper and neatly bound in a paper cover of brown bearing the seal of the association in three colors. On the first two pages are portraits of the National officers and the Executive Committee. Interspersed through the proceedings are full page half-tone engravings of all the past presidents of the association in their chronological order. An appendix contains the constitution and by-laws, the action of the National Association relating to duty of associations and members, revised New York conference resolutions, explanation of resolutions by President Tierney, reasons for membership and a *résumé* of the conventions of the association. A page devoted to a description of the entertainment shows a picture of the silver ladle given to ex-President Tierney by the Kansas City plumbers. The statement is made that the next convention of the association will be held at Atlantic City, N. J. The book has a well arranged index.

The Ideal Fitter.

The American Radiator Company, Chicago, have just issued a revised edition of their publication entitled "The Ideal Fitter," which is designed as a hand book and is of convenient size to enable it to be easily carried in the pocket. It is a volume of 80 pages and contains illustrations and price-lists of the Ideal line of steam and water boilers, as well as illustrations and price-lists of steel storage tanks, expansion tanks, pipe coverings, valve and fittings, floor and ceiling plates, pipe hangers, registers and ventilators and other supplies. It also contains a complete code for use in ordering by telegraph. The special value of this book lies in its use in connection with the company's boiler catalogue. The boiler catalogue gives illustrations and full descriptions of the Ideal line of boilers, but contains no prices, thus enabling it to be freely used by fitters in giving information to their customers and enabling selections of boilers to be made with more satisfaction. The Ideal Fitter, being carried in the pocket, is thus always at hand for consultation relative to prices.

The P. and S. S. League.

On Monday night the bowlers of the Plumbing and Steam Supply League of New York City gathered at the alleys at Twenty-sixth street and Sixth avenue, and when the roar of battle was over the team of the Crane Company were found victors with two games won. The honor of the high team score of 728 went to the F. N. Du Bois & Co. team, which won and lost a game. Secretary Wilson of the defeated salesmen team won the honor of high individual score with 194.

On Thursday night the "family team" of Behrer & Co. scooped all the honors. They won both of their games, made the high team score of 828, and M. Behrer the high individual score of 198. The F. N. Du Bois & Co. team won and lost a game, while the Dimock & Fink Company had two waterloos.

JAMES HERMAN EUSTIS, who was well known to the trade in all parts of New England, died on Saturday, October 12, of typhoid fever, after an illness of two weeks, at his home in Chelsea, Mass. Mr. Eustis was connected with the Walworth Mfg. Company of Boston for 18 years and had the confidence and respect of his employers and all of his associates. He was 38 years of age, and leaves a widow and a six year old son. The funeral services were held on Monday.

Heating and Plumbing Notes.

L. B. SHERMAN, with office in the Park Row Building, New York City, is the New York representative of the Niagara Radiator Company of Buffalo, N. Y.

WILLIAM HARRIS, a plumber and stove dealer of Mansfield, Ohio, has sold to the Westinghouse Company a patent for a device for connecting steam pipes.

A FIRE doing a slight damage to the plumbing establishment of Fladd & Bay, 212 North Clinton avenue, Rochester, N. Y., occurred last week.

THOMSON BROTHERS, Philadelphia, bid \$1638 and secured the contract for the steam heating plant in the Twentieth and Fitzwater street police station in that city.

H. O. CANFIELD, who is well known to the plumbing trade, owing to the variety of Rubber Goods in Washers, Fuller Balls and other Plumbing Specialties which he manufactures, has recently purchased a tract of land on Wood avenue, Bridgeport, Conn., and is preparing for the erection of a new manufacturing plant.

THE BUCKINGHAM-ROUTH COMPANY, New Haven, Conn., are installing an Ideal Boiler in the residence of H. T. Moulton, in Whitneyville.

H. L. NORTON, Springfield, Mass., is designing a system of water works for Russell, Mass., bids for the construction of which will soon be called for.

STEELE & ROSE, Newport, R. I., have the contract for plumbing the New United States Naval Hospital at Coaster's Harbor Island, and are installing new plumbing and bathrooms in the United States Contagious Hospital at Newport. They have also secured the contract for plumbing in the extensive repair shops of the New York, New Haven & Hartford Railroad Company.

THE AMERICAN PLUMBING COMPANY of Providence, R. I., have the contract for plumbing the new Brown University Administration Building.

PLUMBING INSPECTOR BLANCHARD of Kansas City, Mo., has recommended some changes in the exhaustive ordinance governing plumbing and drainage, prepared by Henry Sieben, when he was plumbing inspector of that city. One recommendation is to take the plumbing from under the jurisdiction of the Superintendent of Buildings and place it under the supervision of the Board of Health. The Inspector of Sewers is now working in conjunction with the Street Department, and it is recommended that he be placed under the jurisdiction of the plumbing department.

AUGUST GEIGER, Philadelphia, Pa., is installing a \$3450 hot water heating system in the St. Vincent Orphan Asylum at Tacony, Pa.

THE CARLTON HARDWARE COMPANY, Calumet, Mich., have the contract for the heating and plumbing of the new Larium Bank Building in that city.

C. H. BURDICK & SONS, Newport, R. I., have the contract for extensive improvements and alterations in the residence of Mrs. Hanson, including metal ceilings, electric lighting, plumbing and heating.

FRANK T. BASSETT of the Boston office of the American Radiator Company of Chicago, was a visitor in New York this week.

ROBINS, GAMWELL & Co. have the contract for a complete steam heating plant in the old and new portion of the Mills Building, erected in Pittsfield, Mass.

A FIRE recently visited the plumbing establishment of the Kennedy Company, at Cleveland, Ohio, doing damage to the extent of \$5000, which was covered by insurance.

TRAFTON & MUIRHEAD of Pawtucket, R. I., have secured a plumbing shop near the business center of that city.

A. H. FOWLER of the Fowler & Wolfe Mfg. Company, Bourse Building, Philadelphia, Pa., was one of the out of town visitors to the heating trade in New York this week. Mr. Fowler left with his friends a 12-page catalogue devoted to his company's special construction of Wall Radiators, half-tone engravings showing the great variety of sizes and shapes in which the sections can be

arranged, under windows, under stairs and on the side walls of buildings. One page is devoted to cuts of 24 different styles of brackets and supports for these Radiators. The catalogue gives complete dimensions of the different sizes of sections made and a list of buildings in which they have been used. It is accompanied by a little slip giving the data of a test for efficiency as compared with pipe coils, made by a German Government engineer, for both steam and hot water, showing a greater efficiency of about 30 per cent. for the Fowler & Wolfe Wall Radiators.

JOHN C. F. TRACHSEL, heating and ventilating contractor, Philadelphia, Pa., has taken out city permits for the installation of the following heating plants: At 1431 Norris street, a steam heating plant will be put in at a cost of \$500, and vapor heating plants will be put into 3308, 3316 and 3318 Arch street, at an aggregate cost of \$2679.

THE CRANE COMPANY, Chicago, having found their old quarters on Douglas street, Omaha, too small to meet the requirements of their growing trade in that section, have purchased a piece of ground, 110 x 132 feet, at the corner of Tenth and Harney streets, on which they contemplate the erection of a building for their special purposes. It is expected that the construction of this building will begin early during the coming spring. It will be built of brick, stone and steel. The Omaha branch is a very important house among the company's chain of branches. At every point where they have branch houses they carry a very complete stock of their Valves, Fittings and other specialties from which they are able to make immediate shipments to buyers in the locality which they are designed to serve.

THE L. WOLFF MFG. COMPANY, Chicago, are erecting two additional stories on their large building at the corner of Jefferson and Lake streets. This is the building in which the company's general offices are located. It is, however, mainly used for manufacturing purposes. The two new stories will provide them with much additional floor space, as the building is 150 x 150 feet. The space was badly needed by some of the departments which have been seriously hampered in taking care of their greatly increased business. Among these departments is the shipping department, which is one of the most important details of a manufacturing business, and needs ample room.

ALBERT H. RICKER, Cambridge, Mass., has had a number of important jobs on his hands of late. He has just completed the work of plumbing, throughout, W. W. Vaughan's house in Boston, and the house of Mrs. Whittemore in Brookline. At the present time he is installing a steam heating system in E. W. Wheeler's printing establishment in Boston. The work of putting a new heating apparatus into the Riverside School has been completed by him, and he is now at work plumbing the Riverside Mission.

THE plumbers' strike at Spokane, Wash., has been settled.

J. B. CARROLL, 36 La Salle street, Chicago, is sending out a circular, illustrated in colors, referring to the Hahn Acetylene Gas Burner. This circular gives a number of points of superiority possessed by this Burner, which have made it popular with the trade.

S. C. EDMUNDS & Co., manufacturers of Valves, Valve Cups, &c., Montpelier, Ind., are building a new plant to provide better facilities for the manufacture of their specialties. They are constructing a two-story frame machine shop, 28 x 50 feet, and a one-story brick foundry, 24 x 30 feet. The firm started some time since in a very small building on an extremely limited scale, and have been quite successful in their efforts to develop a business.

THE GADSDEN PIPE & FOUNDRY COMPANY, Gadsden, Ala., have organized with a capital of \$50,000, for the purpose of manufacturing Soil Pipe. Work has been started on the plant and they expect to have it completed and in operation in January. W. S. Fletcher is president of the company.

New Firms and Changes.

THE HOUGH MFG. COMPANY, with a capital stock of \$50,000, have been incorporated to operate a plant at Franklin, Pa., for the manufacture of Brass Specialties, such as Oil Well Supplies, Fittings for Railway Steam Engines and similar Brass Goods.

ALEXANDER THOMSON has purchased the plumbing, steam and hot water heating business of D. L. Hughes, at Summit, N. J. Mr. Thompson has been in the employ of the firm of Milne & Platt of Orange for the past 14 years.

THE FLETCHER MFG. COMPANY, to manufacture and deal in Metal Goods, have been incorporated at Enfield, Conn., by O. S. Greenleaf and M. Lyman, Jr., of Springfield, and E. O. Gibbs of Westfield. The capital stock is \$20,000, of which \$2100 is paid in in cash and \$2500 is represented in property.

A. O. GANGAWERE has purchased the business and stock of the East McKeesport Plumbing Company, at East McKeesport, Pa.

JOHN P. CRONAN, who has been for years manager for H. H. Guernsey of Church street, New Haven, Conn., has purchased the good will and stock of his employer, and will continue the business at the same location. Mr. Cronan thoroughly understands the plumbing and stove business, and he will endeavor to give the satisfaction which has made the store a popular establishment with the community.

THE L. O. HOWELL COMPANY, Philadelphia, Pa., have opened a branch of their plumbing business at 313 South Front street, Wilmington, Del.

Trade Publication.

PLUMBERS' MANUAL AND TEXT-BOOK. By F. W. Tower, Springfield, Mass. Price, \$1. Size $3\frac{3}{4}$ x $5\frac{1}{2}$ inches, 242 pages.

Since various States and cities have adopted regulations requiring plumbers to pass an examination before being granted a license, many tradesmen desire to study up probable questions before taking the examination. In this book the author has given careful consideration to this need. The work is divided into three parts—viz., water and its distribution, wastes and drainage and ventilation, together with a miscellaneous dictionary for plumbers, and the whole work lends itself readily to supplying answers for all the questions that are of interest to the plumber. Under the first topic, friction, air locks, water hammer, service pipes, wells, pumps, rams, filters, range boilers, tanks and metals are treated. Under the second topic, ventilation, drainage, sinks, grease traps, traps, siphonage and house fixtures are considered in detail. The question and answer section of the book is also divided under heads so that information on any subject can be readily found.

TRADE NOTES.

THE AMERICAN FOUNDRY & MACHINE COMPANY of 4 Trinity street, Montclair, N. J., have been incorporated with a capital stock of \$25,000 by John A. Neville, Richard B. Baker and John H. Winans, to manufacture Foundry Facings and Supplies, &c.

THE ALABAMA MFG. COMPANY are making preparations for the erection of an Iron Hollow Ware plant, at Birmingham, Ala., at a cost of \$50,000.

THE STANDARD STAMPING COMPANY, St. Louis, Mo., are completing an extensive addition to their plant.

DIXON'S Graphite Preparations for Steam, Gas and Electric Automobiles form the subject matter of a pamphlet that is being distributed through the mails by the Joseph Dixon Crucible Company of Jersey City, N. J.

THE ORANGE GRAPHITE & MICA MINING COMPANY of New York City have been incorporated with a capital stock of \$100,000 by J. C. Franke, D. F. Toumey and P. A. Crostic of New York.

AWARDS AT THE PAN-AMERICAN EXPOSITION.

Official announcement was made last week of the recompenses adjudged to exhibitors at the Pan-American Exposition as determined by the various juries of award. The juries examined and reported on some 7000 exhibits. They awarded 4577 recompenses in all. Of these 2296 were given to exhibitors of the United States, 600 to Mexican exhibits, 419 to Chilean and the balance to representatives of other Central and South American countries and the West Indies. There were awarded 887 diplomas of gold medals, 1159 diplomas of silver medals, 1147 diplomas of bronze medals and 1384 diplomas of honorable mention.

From among the awards to manufactures of the United States we print the following:

MACHINERY SECTION.**Gold Medals.****MACHINE TOOLS.**

Ferracute Machine Company, Bridgeton, N. J., stamping machinery.

Long & Allstatter Company, Hamilton, Ohio, power punching and shearing machine.

ENGINES, BOILERS AND PUMPS.

Buffalo Forge Company, Buffalo, steam engines.

MISCELLANEOUS MACHINERY, ETC.

American Steam Gauge & Valve Mfg. Company, Boston, steam gauges and engine fittings.

Buffalo Forge Company, Buffalo, blowers and fans.

Carborundum Company, Niagara Falls, N. Y., carborundum.

Jenkins Brothers, New York City, steam and water valves.

Jenkins Brothers, New York City, Jenkins' '96 sheet packing.

Lunkenheimer Company, Cincinnati, Ohio, valves, lubricators and engine fittings.

Lamb & Ritchie, Cambridgeport, Mass., lined pipe.

National Meter Company, New York City, water meters.

National Tube Company, Pittsburgh, Pa., tubes and pipes.

Pittsburgh Meter Company, E. Pittsburgh, Pa., water and gas meters.

Powers Regulator Company, Chicago, automatic temperature controlling apparatus.

Rider-Ericsson Engine Company, New York City, Ericsson engine.

L. S. Starrett Company, Athol, Mass., mechanical tools.

H. B. Smith Machine Company, Smithville, N. J., general wood working machinery.

O. C. White Company, Worcester, Mass., appliances for shop lighting.

Western Tube Company, Kewanee, Ill., valves and cocks.

Henry R. Worthington, Brooklyn, N. Y., jet condenser.

Walworth Mfg. Company, Boston, Mass., valves, fittings and tools.

Silver Medals.**MACHINE TOOLS.**

E. W. Bliss Company, Brooklyn, N. Y., sheet metal stamping and drawing machines.

Norton Emery Wheel Company, Worcester, Mass., Bath machine indicators.

Niagara Machine & Tool Company, Buffalo, N. Y., sheet metal tools.

ENGINES, BOILERS AND PUMPS.

Kleley & Mueller, New York City, steam specialties.

MISCELLANEOUS MACHINERY, ETC.

American Blower Company, Detroit, Mich., fans and blowers.

S. R. Dresser, Bradford, Pa., pipe couplings.

Eddy Valve Company, Waterford, N. Y., gate valves.

Eddy Valve Company, Waterford, N. Y., Eddy fire hydrant.

Field Force Pump Company, Lockport, N. Y., spraying machinery.

Fairbanks Company, Buffalo, steam valves.

Jenkins Brothers, New York City, Jenkins' pump valves and disk.

Wm. Powell Company, Cincinnati, Ohio, oil cups and valves.

J. H. Williams Company, Brooklyn, N. Y., drop forged wrenches and chain pipe wrenches.

Western Tube Company, Kewanee, Ill., structural tubing.

Bronze Medals.**MISCELLANEOUS MACHINERY, ETC.**

Atlas Pipe Wrench Company, New York and San Francisco, Atlas pipe wrenches.

Atlas Pipe Wrench Company, New York and San Francisco, tube cleaners for water tube boilers.

Bashlin & Co., Warren, Pa., valves and oil cups.

Buffalo Meter Company, Buffalo, water meters.

A. A. Griffing Iron Company, New York City, steam separating traps (Bundy).

Harrison Safety Boiler Works, Philadelphia, Pa., Cochrane steam and oil separator.

Harrison Safety Boiler Works, Philadelphia, Pa., drainage system for vacuum oil separator.

Robert A. Keasbey, Buffalo, magnesla covering.
 Monarch Mfg. Company, Waterbury, Conn., safety engine stop valves.
 Norton Emery Wheel Company, Worcester, Mass., bench and floor grinding machinery.
 National Pipe Bending Company, New Haven, Conn., coils of iron, brass and copper pipe.
 Trimont Mfg. Company, Roxbury, Mass., pipe tools.

ENGINES, BOILERS AND PUMPS.

Abendroth & Root Mfg. Company, New York City, improved Root water tube safety boiler.
 American Blower Company, Detroit, Mich., blower engine.

Honorable Mention.

Abendroth & Root Mfg. Company, New York City, Root's spiral riveted pipe.
 Hickman-Melhorn Company, Pittsburgh, Pa., combination vise and pipe wrench.
 Kennedy Valve Company, New York City, iron and brass valves.
 Vincent Valve Company, Sandusky, Ohio, globe and gate valves.

AGRICULTURAL IMPLEMENTS.

Gold Medals.

Coldwell Lawn Mower Company, Newburg, N. Y., lawn mowers.
 De Laval Separator Company, New York City, centrifugal cream separators.
 F. E. Myers & Bro., Ashland, Ohio, farm pumps.
 Geo. L. Squier Mfg. Company, Buffalo, sugar mills.
 Supplee Hardware Company, Philadelphia, lawn mowers.
 Vermont Farm Machine Company, Bellows Falls, Vt., U. S. cream separator, Babcock tester and Davis swing churn.

Silver Medals.

Coldwell Lawn Mower Company, Newburg, N. Y., motor mower.
 Iron Clad Mfg. Company, New York City, milk cans and dairy supplies.
 A. H. Reid, Philadelphia, Pa., cream separator and churn.
 Star Milk Cooler Company, Haddonfield, N. J., sanitary dairy apparatus.
 P. M. Sharples, Philadelphia, Pa., cream separator.

Bronze Medal.

P. M. Sharples, Westchester, Pa., cream separators and dairy and creamery appliances.

MINES AND METALLURGY.

Gold Medals.

American Steel & Wire Company, Chicago, Ill., steel and finished steel products.
 Edward G. Acheson, Niagara Falls, artificial graphite and corundum.
 Cleveland Stone Company, Cleveland, Ohio, sandstone used in architecture and grindstones.
 Norton Emery Wheel Company, Worcester, Mass., corundum wheels.
 Pike Mfg. Company, Pike Station, N. H., corundum specimens and products.

Silver Medals.

Baker & Co., Newark, N. J., platinum metals and products.
 H. W. Johns Mfg. Company, New York City, exhibit showing evolution of asbestos.

ELECTRICAL DIVISION.

Gold Medal.

Pittsburgh Reduction Company, Niagara Falls, N. Y., electrical conductors of aluminum.

Silver Medal.

Eureka Tempered Copper Works, North East, Pa., tempered copper and cast copper.

Honorable Mention.

American Watchman's Time Detector Company, New York City, watchman's time detector.

TRANSPORTATION.

Silver Medals.

Consolidated Car Heating Company, Albany, N. Y., heating apparatus for steam and electric cars.
 Gold Car Heating Company, New York City, car heating apparatus.
 Safety Car Heating & Lighting Company, New York City, steam heating for railway cars.
 Twentieth Century Mfg. Company, New York City, bicycle, cab and automobile lamps, and special purpose hand lanterns.
 Veeder Mfg. Company, Hartford, Conn., cyclometers, odometers, counters and fine castings.

Bronze Medal.

Noera Mfg. Company, Waterbury, Conn., steel and brass rollers, pumps, wrenches and cyclometers.

MANUFACTURES.

Gold Medals.

American Wringer Company, New York City, clothes wringers.
 American Steel & Wire Company, New York and Chicago, wire nails and miscellaneous springs.

Bissell Carpet Sweeper Company, New York City and Grand Rapids, Mich., carpet sweepers.

Buffalo Scale Company, Buffalo, Buffalo scales.

Geo. M. Clark & Co., Chicago, gas and gasoline stoves.

Enterprise Mfg. Company of Pennsylvania, Philadelphia, food choppers, fruit presses and mills.

Iron Clad Mfg. Company, New York City, enameled and galvanized iron ware.

Michigan Stove Company, Detroit, stoves and ranges.

Pittsburgh Reduction Company, Pittsburgh, aluminum.

Isaac Emerson Palmer, Middletown, Conn., hammocks and apertures.

J. H. Williams & Co., Brooklyn, drop forgings and special designs.

Silver Medals.

Abendroth Bros., New York City, steam and hot water heaters.

Abendroth Bros., New York City, gas ranges.

Buffalo Mfg. Company, Buffalo, nicked brass and japanned wares.

E. Howard Clock Company, Boston, the Howard watchman's clock.

James Heekln & Co., Cincinnati, Ohio, Kin-Hee quick coffee pot.

Iron Clad Mfg. Company, New York City, steel storage and shipping barrels.

Iron Clad Mfg. Company, New York City, cold weld range boilers.

Jewett & Co., Buffalo, stoves and ranges.

Kelsey Furnace Company, Syracuse, N. Y., warm air generators.

L. O. Koven & Bro., New York City, hot water boiler, with coil.

MacDougal White Lead Company and Buffalo Oil, Paint & Varnish Company, Buffalo, MacDougal white lead and Buffalo oils, paints and varnishes.

Pratt & Letchworth Company, Buffalo, malleable iron and steel castings.

Pike Mfg. Company, Pike Station, N. H., sharpening and grinding stones.

Pittsburgh Reduction Company, Pittsburgh, Pa., aluminum cooking utensils.

Arthur E. Rendle, New York City, Paradigm and Duk Bac skylight.

John A. Roebling's Sons Company, Trenton, N. J., wire cloth and screens.

Wilke Mfg. Company, Anderson, Ind., refrigerators.

Wagner Mfg. Company, Sydney, Ohio, aluminum and iron hollow ware.

Bronze Medals.

George M. Clark & Co., Chicago, gas water heaters.

Cosmopolitan Range Company, New York City, electric broiler and oven, and French range.

Erie Specialty Company, Erie, Pa., cork pullers.

Iron Clad Mfg. Company, New York City, steel soda fountains.

L. O. Koven & Bro., New York City, galvanized iron range boiler.

Lorillard Refrigerator Company, New York City, refrigerators.

Edward Miller & Co., Meriden, Conn., oil lamps.

Mann Bros., Chicago, wooden ware and washing machines.

1900 Washer Company, Binghamton, N. Y., 1900 washer and washing machines.

Norton Emery Wheel Company, Worcester, Mass., India oil stones.

Purity Stopper Company, New York City, aluminum stoppers.

Roberts Mfg. Company, Philadelphia, germ proof filters.

A. L. Swett, Medina, N. Y., hot water heater.

Honorable Mention.

American Lamp & Brass Company, Trenton, N. J., lamps.

A. Buch's Sons, Elizabethtown, Pa., lawn swings.

Jenkins Brothers, New York City, electromagnetic lamp holder.

United Indurated Fibre Company, Lockport, N. Y., ice cream freezer.

Death of William Rodgers.

William Rodgers, a pioneer in the sheet and tin plate industry, and the introducer into this country of the manufacture of Russia and planished iron, died on October 7, at the City Hospital, Wheeling, W. Va., from paralysis, after an illness of two years. Mr. Rodgers was born in Wolverhampton, England, in 1827, and came to the United States when 30 years of age. He built in 1857 the Everson & Preston Works, the first sheet mills erected in Pittsburgh. Four years later he built two sheet mills at Apollo, Pa., where he made the first black plate for tinning purposes ever turned out in this country. In 1870 he built two mills at Leechburg, Pa., for the production of tin plate and sheet iron. Mr. Rodgers was sent, in 1871, by Governor Geary of Pennsylvania to Great Britain and Europe in order to investigate the metal manufactures on the other side of the Atlantic. While in Russia he discovered the secret of the manufacture of Russia iron, which he brought back to this country and put to use in the establishment of the American Russia iron industry. He was the first to use natural gas for iron making, and at one time owned patents covering its use for all purposes.

THE DONNER PROCESS OF ROLLING BLACK PLATE.

When the negotiations for the scale between the Amalgamated Association and the American Tin Plate Company were concluded the Monessen plant was excluded because a special method of rolling black plate was in operation there. An admirable description of the system in question is given in a recent issue of *Tin and Terne*, from which we reproduce the following, the system having been introduced at the Monessen works early in 1898:

The system was put in operation, and the first patent issued, before the formation of the American Tin Plate Company. W. H. Donner, the patentee, made an agreement with the company by which a thorough trial of the economies should be made, extending over a period of three years, to determine the basis of compensation. This time has now nearly expired. The patent is No. 615,535, dated December 6, 1898. There seems to be no question that the American Tin Plate Company enjoy an important advantage over competitors through the possession of the system.

In the rolling of tin plate two methods only have heretofore been used, with the separate roughing stand, and without it. With the single stand, the roughing has a greater heating effect than any of the other operations, and the result is that at the close of the roughing the rolls have been unduly heated, while the heat goes down more or less irregularly while the pairs, fours and eights are being rolled. It is difficult to keep the rolls up during the rolling of the eights. Besides this general heat change, which constitutes a complete cycle with each heat, there are minor variations owing to the "rests" which are introduced more or less irregularly in the effort to keep the rolls of the right contour. The rolls are continually seesawing above and below the average temperature. As the rolls are being puffed the outside is hotter than the inside; as they are approaching the hollow condition the outside is cooler than the inside. When the separate roughing stand is used the finishing stand remains wholly idle during the roughing, while the roughing stand is wholly idle for long periods at a time.

It is plain that if the rolls were doing absolutely uniform work their temperature would remain uniform. How is this to be done? There has been a popular superstition that the work must all be done on the same pair of rolls. In support of this position it is argued that the passes must all be of the same contour, and it is held that since there is considerable variation in the contour even with the same pair of rolls, there would be still more with different pairs of rolls. This is a wholly erroneous conclusion, because the variations in contour in the single pair of rolls are due simply to the fact that the work is done all with one pair. It matters not how many successive pairs of rolls are used, provided they are turned to suit the temperature and the temperature is kept uniform. All the passes will then be similar.

A FIVE-STAND UNIT.

The inventor argued that the ideal condition would be the passage through a given stand of rolls of packs having all the same length and temperature, the passes occurring at absolutely regular intervals. Then the rolls would remain at exactly the same temperature, so that the contour would be the same at all times and there would be no danger of breakage from differences of temperature between the inside and outside portions of the roll, and from this was evolved the new system, which attains the desired result. The simplest case involves the use of either four or five stands of rolls as a unit, five being preferable. The conditions at Monessen have been such, there being but six completed mills, that this arrangement could not be conveniently worked, and so another plan, involving the same principles, has been used, but it will be well to describe first the system as it would be practiced in case five stands of rolls constituted a unit. In this case, the first two stands will do all the roughing, on the third stand the pairs will be rolled, on the fourth the fours, and on the fifth

the eights. The roughing is divided between two pairs of rolls because the duty is so much more severe. The work is continuous with each stand, and here is the novel point which forms the basis of the patent. There will always be more than one series of bars being rolled at a time. In the usual practice the last pack of eights is done before the first pair of bars is roughed. There is but one series of bars or packs being rolled at a time. With the plan outlined there will be four series of bars or packs being worked at any given time. The basis of the patent is that there is a plurality of series of bars under treatment all the time, and in no other way can the rolls be made to receive the regular heat treatment to which reference has been made, so that they will remain always of the same contour and will not vary in temperature.

THE IDEAL OPERATION.

The operation would be as follows: A heat of bars is put into one of the two furnaces standing opposite the first two stands of rolls. When they are hot the bars are withdrawn and roughed. A few will be roughed on the first stand, then a few on the second stand, then back to the first again, so as to divide the work evenly between the two stands. When two bars have been roughed they are matched, and the pair put into the first of the pair of furnaces opposite the third stand of rolls. Meanwhile the other of the pair of furnaces opposite the two roughing stands is being charged with bars. The first operation ends with a heat of bars in one of the first pair of furnaces, ready to be roughed, while the other of the pair of furnaces is ready for the third heat of bars to be started. The first of the pair of furnaces opposite the third stand of rolls is full of pairs ready to be rolled. The next operation is to roll these pairs, putting them back, doubled, into a furnace of the next pair. During this time the second heat of bars is being roughed, and the third heat charged. The next operation is to roll the fours on the fourth stand of rolls, putting them back, doubled, into a furnace of the last pair, while at the same time the second series (in the shape of pairs) is being rolled on the third stand, and the third series (in the shape of bars) is being rolled on the first two stands, while the fourth series (the cold bars) is being charged into the furnace. The next operation, which completes the chain, is to finish the first series (in the form of eights) while the second series is being rolled and doubled into eights, the third series is being rolled and doubled into fours, the fourth series is being rolled and matched, and the fifth series is being charged into the furnace. The whole system is now in operation, and subsequent practice is simply to keep up the work in a regular and orderly manner, new heats of bars being continuously charged. Every time a new heat is charged each of the preceding heats is advanced one step. The work is kept up continuously, and each stand of rolls is always doing the same work. Each pair of rolls is turned for the exact work it is to do, and the passes are therefore all parallel at all times. In any of the pairs of furnaces, one of them will be continuously receiving cold packs while the other is supplying hot packs during the period, while in the next period their relative positions will be reversed, and so on.

A very important feature of the practice just referred to is that, as the packs are taken from the furnace and rolled, they are not put back into the same furnace, but into another furnace. In the ordinary practice the packs are put back cold into the furnace from which hot packs are being withdrawn, with the effect that portions of the hot packs are liable to be chilled, and will therefore roll irregularly. To avoid this as much as possible great skill is required on the part of the heater, which can now be done away with. Then again, each roller or catcher will always be handling either bars, pairs, fours or eights, and will acquire special skill in his one particular branch. A workman can roll eights better if he rolls nothing else. Between the third and fourth stands is stationed a doubler with his doubling shear, and another between the fourth and fifth stands. The first named will be doubling fours all the time. The second will be doubling eights all the time. Each will be a better workman, other conditions being equal.

than if he doubles fours for a while, then doubles eights, and then helps at the furnace.

THE MONESSEN METHOD.

As has been explained, the conditions have been such at Monessen that the system just described would be inconvenient, because there are but six mills entirely completed. It has been explained at such length because it shows most clearly the principle, and produces absolutely the result of maintaining at all times the same temperature in a given stand of rolls. It has been found that even a partial application of the new principle fully meets all requirements, and the six mills at Monessen have therefore been divided into three pairs, each pair constituting a unit, separate and distinct from the others. On the first mill the bars and pairs are rolled, and on the second mill the fours and eights. Thus the first stand is rolling bars and pairs alternately, and the second mill fours and eights alternately. It is found that the variation in the work is not in this case sufficient to seriously disturb the temperature or contour of the rolls. The writer has carefully inspected the working of the plant on this principle. Between the two mills is placed a doubling shear with a doubler. He is kept doubling heats of fours and eights alternately.

ADVANTAGES AND RESULTS.

The rolls being turned exactly for the work they are to do, and being kept at practically the same temperature, the ends of the finished packs are wholly without horns or rounded ends. The scrap is very materially reduced at the doubling shear and at the squaring shear. The edges of the packs are straight and even. The surface of the sheets is excellent. As the men are doing practically the same work continuously, they acquire a greater skill than is usual. But few of the men working at Monessen have had any previous experience in a tin mill. The bulk are men who have been trained to do the work, and they have made excellent workmen, as was evidenced to the writer by the excellent quality of the work turned out and the ease with which they were turning out the product, which was averaging over 14,000 pounds per turn for each double crew. The blackboard showed four turns considerably exceeding 14,000 pounds for a pair of mills, during the week, but the inventor seemed desirous of apologizing for the outputs, and it seemed evident that the men if pushed could turn out very much more, possibly as high as 20,000 pounds for a pair of mills, when rolling packs 28 x 60. It is certainly remarkable how quickly the men at Monessen have learned to do their work. They handle the tongs with the ease and confidence of veterans in the business. They are paid wages which are eminently satisfactory to them, yet the tonnage cost of their labor is considerably less than it is in other mills. Their high earnings are due mainly to the steady operation of the mills throughout the turn, by which a very large output is secured without special effort.

Only one roll has been broken at Monessen since the present run began, last February, and that roll had a defective neck. Only two coupling boxes have been broken in the past six months.

The reduction in scrap and the regularity of the doubling work at Monessen has in considerable measure been due to the use of a peculiar form of doubling shear, the invention of Frank Donner, a brother of W. H. Donner. The shear was patented some time ago. It is so similar to the ordinary doubling shear that a workman who has been accustomed to the use of the ordinary doubling shear can change to it without experiencing any feeling of awkwardness, the only difference being that the portion of the table opposite the knives is depressed $\frac{1}{2}$ inch or so below the balance of the table, forming an edge which is exactly at a right angle to the knives. In shearing off the end of the pack, the doubler shoves the pack against this edge, and the end of the pack is in consequence sheared off at an exact right angle. The presence of a guide for this work, extending above the general surface of the table, would be objectionable.

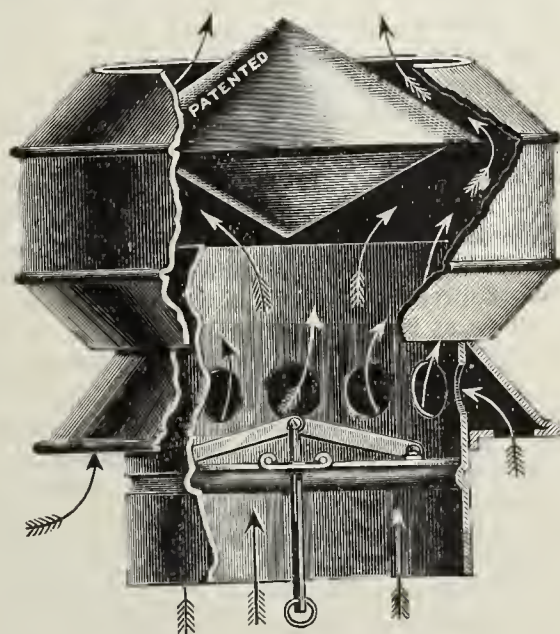
A peculiar effect of the steady and regular tempera-

ture of the rolls is seen in the behavior of the bearings of the rolls. To secure good lubrication it is of course necessary that there should be the most accurate fit between the brass and the neck of the roll. This fit will come by wear, provided the neck remains of the same shape. If the roll varies in temperature the shape of the neck will also vary. At Monessen the practice keeps the necks of the same contour continuously, and the wear of the brasses is much below the average, while the consumption of grease is reduced to less than one-half. The perfect fit between brass and neck makes the bearing run cool.

It has been found that the rolls will maintain a good surface for two weeks, and in fact seem less liable to deterioration than when used with the regular system and with the ordinary output.

The Russo Side Draft Ventilator and Automatic Damper.

In the accompanying illustrations we show a new ventilator, named the Russo, which is being put on the market by David J. Rosen, 439 Canal street, New York City. A broken view of the ventilator with the auto-



The Russo Side Draft Ventilator and Automatic Damper.—Fig. 1.—Broken View, Showing Construction and Damper Closed

matic damper in place is shown in Fig. 1, while Fig. 2 shows the automatic damper, which is presented as a new twentieth century idea in connection with ventilators. From the broken view presented in Fig. 1 it

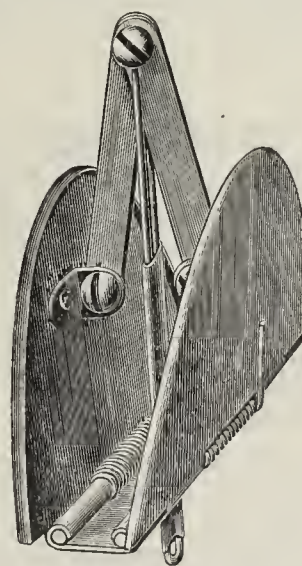


Fig. 2.—View of Damper Open.

can be seen that the construction of the Russo ventilator is such as to induce an exhaust whenever a strong wind is blowing and to prevent a back draft under any conditions. These ventilators are said to be so constructed and finished as to present an attractive appearance, in keeping with the architecture of structures upon which

they may be used. The automatic damper is so constructed that it occupies but a small space in the ventilating tube, and, by means of a spring, it is always kept in an open position. It is provided with an eye to which a cord may be attached for pulling down the wings and closing the ventilator when this is desirable. The Russo ventilator is manufactured either with or without the automatic damper, and is adapted for use in ventilating schools, club houses, convention halls, or other public buildings. When used without the damper it is said to have a beneficial effect on smoky chimneys. The ventilator is made in a variety of sizes and is fully explained in the catalogue, which can be had on application.

The Spiral Riveted Tube Company.

There have been incorporated under the laws of New Jersey, the Spiral Riveted Tube Company, with a paid in capital of \$175,000. The principal object of the company is defined as follows: "Manufacturing and dealing in spiral riveted pipe machines, spiral riveted pipe, light and heavy sheet iron work, brass and iron castings, including the business of galvanizing in all its branches." The company are the owners of several very recently granted patents on improved machinery for manufacturing spiral riveted pipe, which will enable them to manufacture better and stronger pipe and produce it much more rapidly and with far greater economy of labor than has hitherto been done.

The factory, which will cover a little over an acre of land, will be located in Jersey City near the corner of West Side and Fisk avenues, on the Newark branch of the Central Railroad of New Jersey with a railroad siding running directly through the works. The New York office will be at 284 Pearl street. The building for the galvanizing department, now nearly completed, is 50 x 100 feet in size, and contains the largest and most modern improved galvanizing plant in this section of the country. It has two baths, each 32 inches wide, 44 inches deep and 22 feet long, holding 50 tons of metal. This department will be ready for operation November 1, and it is reported that the company have enough contracts already booked for outside work to keep it well employed for many months. Pipe machines capable of turning out pipe of all sizes from 3 to 30 inches in diameter are now building at the works of George M. Ball & Son of Brooklyn, and will be completed by the time the main building of the plant is finished and ready to receive them.

The officers of the new company are: President and treasurer, John A. Wilbur (also president of the Salem Nail Company); secretary, A. Howard Abendroth (formerly of the Abendroth & Root Mfg. Company); general superintendent, Frederick W. Stapf (formerly with the Abendroth & Root Mfg. Company).

FLASHINGS.

THE YOUNGSTOWN IRON, SHEET & TUBE COMPANY, Youngstown, Ohio, announce to the trade that they expect to have their Sheet mills in operation by January 1, 1902, and that they are prepared to enter orders for Double Refined Puddled Iron Sheets, Common Iron Sheets, and Black and Galvanized Steel Sheets for delivery during January, February, March and April, 1902. The company propose to make a specialty of Double Refined Puddled Iron Sheets.

THE PARKERSBURG IRON & STEEL COMPANY of Parkersburg, W. Va., have increased their capital stock from \$250,000 to \$500,000. The company, who have been organized for the purpose of manufacturing Sheets, have decided to operate on a larger scale than was at first intended.

GOULD BROTHERS, Bridgeport, Conn., have the contract for the Slate Roofing on the new St. Mary's Parochial School in that city.

THE MISSOURI CAN COMPANY, with principal offices at 15 Exchange Place, Jersey City, N. J., have been incorporated with a capital of \$250,000, by Dwight W.

Morrow, Nathan A. Smyth, J. J. Treacy, Harold Walker and J. C. Walker, to manufacture Tin Cans.

THE purchase by the Westinghouse interests of about 2000 tons of German Sheet Iron, recently shipped from Hamburg, was somewhat of a surprise to the trade, inasmuch as the Westinghouse Company have hitherto used the American product exclusively. The Sheets purchased abroad are of light gauges, and are used for air pump and cylinder casings. It is claimed that experience has shown the German product to be better adapted for this purpose and to wear longer than the American Sheets.

HENRY WEYAND of Waterbury, Conn., has the contract for the Tin Roofing, Conductors and Sheet Metal work on a new church building at Brewsters, N. Y.

A PARTY of 20 hardwaremen who were delegates to the National Hardware Association convention held in Cleveland, Ohio, last week, visited Canton on Saturday, traveling on a special car. They went as the guests of the Berger Mfg. Company, the Stark Rolling Mill Company, the Carnahan Tin Plate Company and the Carnahan Stamping & Can Company of Canton. The representatives of the Berger Company at the convention had a card hung up in convention hall Friday night inviting all delegates who wished to go to Canton to inspect their manufacturing plants and incidentally visit the McKinley tomb in Westlawn, all transportation expenses being paid by the Canton companies extending the invitation.

W. S. BULLARD, Bridgeport, Conn., has the contract for covering the roofs of the new building of the Malleable Iron Company in that city with Plastic Cement Roofing. He is using the same material on a new block for Dr. Damon, and on Thomas P. Taylor's new factory.

FREEMAN BROTHERS, Ithaca, N. Y., have been awarded the contract for laying 75 squares of Tin roofing on the parish hall of the Roman Catholic Society in that city. They will also furnish the gas lighting system.

WILLIAM THIELMAN of St. Cloud, Minn., has just opened a Tin shop in that city.

THE WASHINGTON CHARCOAL IRON TIN MILLS, who have a Tin Plate plant at Washington, Pa., have given an order to the Mesta Machine Company of Pittsburgh for a Mesta Pickling Machine. The fifth mill in the Tin Plate plant of this concern will be put in operation soon.

THE WELLSVILLE WORKS of the American Sheet Steel Company, at Wellsville, Ohio, which now contains six mills, will be increased to a ten-mill plant. It is possible that in the spring six more mills may be added to these works, making it a 16-mill plant.

THE members of Unity Lodge, of the National Steel Company, at New Castle, Pa., have surrendered their charter to the Amalgamated Association on account of the manner in which the late strike was conducted. The men returned to work at this plant as individuals and organized labor is not recognized by the management.

Metal Polishes.

The articles which are used to impart a brilliant polish to brass, copper, steel and other metallic surfaces, says a writer in the *Decorators' Gazette and Plumbers' Review* of London, may be divided into two classes:

1. Dry polishing powders.

2. Polishing pastes and compositions.

Polishing Powders.—Numerous substances are used as scouring or burnishing agents for metal work. Among these may be mentioned whiting, powdered rotten stone, powdered bath brick, Tripoli powder, powdered pumice stone, putty powder (oxide of tin), powdered emery, powdered oxide of iron (colcothar, crocus, rouge, &c.), calcined magnesia, bone dust, &c.

It is absolutely essential that any material which is selected as a polishing agent should be reduced to a state of impalpable fineness. The means to be adopted to secure this will, of necessity, vary in the case of different substances, and this is outside the scope of an article like the present. As a rule, the various dry materials specified above can be purchased in a condition suitable for the purpose now under consideration.

The selection of a particular polishing material will depend on the quality of the product which it is desired to prepare, and will also be influenced to a very large extent by the nature of the metallic surface on which the polish is intended to be used. Thus for a hard surface, such as steel or brass, a selected oxide of iron, or emery powder or powdered bath brick is suitable; for a softer surface, such as copper, a less gritty material will have to be used, and whiting, putty powder or some similar substance may be chosen. For plate powders, again, the materials have to be still more carefully selected, and there must be absolute fineness in the texture of the powder. Specially prepared rouge, which is a preparation of one of the softer oxides of iron containing a very small proportion of silica, or putty powder, or finely powdered bone dust, will usually find a place in powders for this purpose.

The following are typical recipes for various classes of dry polishing preparations:

1. Polishing Powder for Steel or Brass—

	Parts.
Colcothar	100
Emery flour.....	50
Rotten stone.....	50

For softer metals increase the colcothar, and decrease the other ingredients.

For brass or copper polish a small proportion of oxalic acid may be added, say 5 per cent. of the other ingredients. It must then be remembered that the mixture is poisonous.

2. Knife Polish—

	Parts.
Emery powder.....	20
Powdered bath brick.....	100
Powdered middle purple oxide of iron....	20

The proportions may be varied according to cost and cheapening material, such as brick dust, is often introduced.

3. Silver and Plate Polish—

	Parts.
Paris white.....	50
Bone dust.....	50

4. Silver and Plate Polish—

	Parts.
Calcined magnesia.....	20
Putty Powder.....	50

5. Silver and Plate Polish—

	Parts.
Calcined magnesia.....	100
Finely powdered rouge.....	20

Polishing Pastes and Compositions.—Owing to their convenience, and the absence of dust connected with their use, these materials are now extremely popular, and are used in large quantities. They consist, for the most part, of one or more of the dry powders already referred to mixed with sufficient oily or greasy matter to form a paste. There is a great scope in the selection of a suitable medium with which to mix the dry material. Tal- low, either alone or blended with one of the animal oils, is an excellent medium, as it possesses properties which render it an approved protector of metals, especially iron or steel. Crude paraffin scale (unrefined paraffin wax) also makes a good medium; so, too, does one of the thicker mineral oils solidified by the addition of a small quantity of paraffin wax. Stearine or stearic acid is used for the same purpose, but these substances are not suitable for the finer polishing pastes, as they are acid in nature. The process consists in melting the medium which has been selected and in stirring in the dry powder. The mixture is then run into the boxes in which it is sold. Small quantities of scenting substances are usually added to mask the odor of the medium.

The Indiana courts have decided after quite a long litigation, which has been hotly contested, that the Indiana weekly wage law is constitutional. This law makes it imperative for all employers of labor in the State of Indiana to pay their employees weekly. It is a regulation which will entail much expense on large manufacturing establishments employing a great force of workmen, but it appears that no exceptions could be recognized and that the law would have to be made applicable to all employers.

Oil Fuel in California.

A correspondent of the New York *Commercial*, writing from San Francisco, reports that the use of oil as fuel in California has in many ways proved quite a success. A number of concerns, large and small, are changing from coal fuel to oil. To-day in the State there are 6000 families using oil for cooking or heating, and several small manufacturers are using the same fuel for small power purposes with every satisfaction. The case is cited of H. H. Linnell of Berkeley, Cal., who a short time ago, in consequence of the high cost of coal for power purposes in his manufacturing plant, began to try California crude oil. A Larkin burner was obtained, and the furnace altered for the new fuel. The experiment is stated to have been successful from the start. The fuel bill was reduced more than one-half, and a steady and even heat was obtained. The gauge shows that the difference in heat during a day's run did not exceed 5 degrees at the most. The objection made to the use of oil as a fuel that the burners soon become clogged was overcome by a device which immediately clears the burner of any obstruction. The fuel supply is regulated in an instant and the boiler can be set to register just so many pounds of steam from early morning to late at night, needing no care from the fireman or anybody else. The oil is kept in a cement tank near the works, and is pumped into a tank on top of the building by a small pump working from the boiler. It is fed to the furnace by gravity. Bakersfield oil is used, and the average cost for the last four months was \$19.35 a month, 554 gallons of oil being used.

Mr. Linnell, from his own experience, estimates the advantages of oil fuel over coal as follows:

1. Cost. Fuel expenses two-thirds less than when coal was used.
2. Steady heat. Now possible to obtain a continuous heat, which was not possible with coal.
3. Less labor required. Saves almost the labor of one man, engaged as fireman, engineer, &c., and who was almost constantly trying to keep up a steady heat.
4. Cleanliness. No smoke, dust, dirt or ashes.
5. No danger from fires. Most of the fires in places where boilers are used come from raking out and banking fires. An oil fire is put out by turning off a cock.
6. In hot weather oil is appreciated by those who have been obliged to work about a hot furnace shovelling coal into the fires, with the thermometer at 100 degrees or more.

Pure Water.

At the recent convention of the Central States Water Works Association at Evansville, Ind., Charles E. Rowe of Dayton, Ohio, vice-president of the American Water Works Association, took part in the discussion on "Pure Water." Following is an abstract of Mr. Rowe's remarks:

The following facts should be remembered as very important. The water will run just the same in the gravel subsoil as it does with the river or creek above it. It always hunts a lower level, and it will drain toward a river or toward a creek the same as the surface water does. It is not the backwater so called—in the case of high water—that makes the wells come up. It is the water in the ground that cannot get into the river. The water in the river does not run back, or it would not be held in its bank. Nature provides for that. Water will run into a reservoir, not out, just the same as with the human bladder, if in proper position it will hold water, but reverse it, turn it inside out, and the water runs through it as it would through a sieve. In regard to the use of river water, Indianapolis is now looking for a new water supply. River water is the water they all ought to look to for their supply. It is not cool for drinking, like that furnished by such a system as Dayton has, where the water is not exposed to the air, but it is so much nicer for bathing and so much nicer for steam purposes. Its users avoid the ill effects of lime, magnesia, &c., that are in the deep well water; but they have made sewers out of the rivers. Their rivers, if not polluted, would supply the pure water that falls from the heavens and rolls down the rivers; but factories of all kinds make dumping places of those rivers, and they ought to take this matter in hand and ask their legislatures to obviate this evil.

It is objected that this use by factories of the streams destroys the fish; that is true; very few fish are left in

creeks and rivers, because the paper and woolen mills use aniline colors—a deadly poison. Nevertheless, with all these sources of pollution, it will be found that a river, after it has rolled along for 10 or 20 miles, almost neutralizes these poisons, and the water becomes sufficiently purified for use. Columbus uses almost every drop of water in the Scioto River, and it flows away on the south as black as tar; then it runs along for 15 or 20 miles and seems purified, and the next city below uses it for its water supply; and after it has been passed through that town and its sewers, it runs back into the Scioto again, down to the Ohio, and is again used for the water supply of other cities. It is, indeed, surprising how as the water runs along for 15 or 20 miles in the air and sunlight, and the constant movement purifies the water, yet there is too much of germs and bacteria still left in it, and the great evil to be encountered now is that the water supply of rivers is contaminated, oftentimes needlessly, by mills and factories. This should be prevented by suitable legislation. This evil should be disposed of in some better way.

Bicycle Emery Grinder.

The Bicycle Grindstone Company, West Thirty-fifth and Iron streets, Chicago, Ill., are offering the bicycle emery grinder shown herewith. The frame is made en-



Bicycle Emery Grinder.

tirely of properly seasoned lumber, braced in a thorough manner with wood and steel. It is provided with an adjustable cast iron seat, properly secured. The pedals are hinged to the frame by steel hinges, and the pitman rod is so connected, it is explained, that in the event of an obstacle striking beneath the pedal the rod is released to prevent damage to the gearing. The head containing the spindle and ball boxes is under cover and protected so that no dirt can interfere with the working parts. There are 20 $\frac{1}{4}$ -inch and 48 5-16-inch steel balls used in the construction of the machine, which can be speeded to from 1800 to 2500 revolutions per minute. One medium grit, 8 x 1 inch, high grade emery wheel is furnished with the grinder. The spindle is constructed so that two emery wheels can be used at the same time. Chuck attachment is furnished at an addition to the regular price of the machine. Among the advantages claimed are the following: That the machine is simple in construction; that as compared with a power grinding machine it will do equally as good work; that it is portable and requires but little space; that lost motion on the machine can be easily taken up; that it is constructed without belts or chains, and that the operator sits comfortably while grinding. The makers state that with the machine sickles can be ground, saws gummed, skates ground, razors concaved, metal polished, scissors and all kinds of tools sharpened, and that it will be found suitable for general farm purposes.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WANTS HELP IN BRAZING.

From F. A., Attleboro, Mass.—Belng in need of a little information about brazing, I know of no better way of obtaining it than through the columns of *The Metal Worker*, where, with the kindly help of "Inspector," I have already learned considerable about lead burning, the use of the compound blow pipe, and the hydrogen flame. In fact, I have made all the apparatus described by "Inspector" in his articles in *The Metal Worker* of July 14, August 25 and December 15, 1900.

A short time ago my employer asked me if I could braze a copper tank for him. I told him I was willing to try. The tank was 8 feet long, 15 inches wide and 15 inches deep, and made of copper about 1-16 inch thick. It was made up by the tinsmith and double seamed. The work I had to do was to braze the seams on the inside. You will probably think it was quite a formidable undertaking for an inexperienced hand. That is what I thought when I tackled it. I raised one end of the tank so as to form an angle to work in. I first applied the flame of a compound blow pipe on the top side, but found I could not get heat enough, so I got a plumbers' furnace and put that underneath the seam, and thus, by getting the spelter and flux in the seam between two fires, I was able to make them flow. It was a long, tedious job, because I had to keep moving my furnace along as the work progressed. I got the tank perfectly tight, although if the seam had been smoother I should have liked it better. I used powdered borax for flux. I am now asked to braze another tank, which is larger than the other, and would like a little help in the way of information. What would be the proper way to heat the seams? Should the spelter and flux be mixed together with water, or applied separately? Should the spelter be placed along the seam before or after applying the heat, and should much flux be used or only a little? The borax I used was powdered borax, and the spelter fine. If you can help me out in this matter, or will place it in the way of some one that can, I shall be much obliged to you.

CASE HARDENING METALS.

From C. & L., Eagle, Neb.—Please publish in your next issue a good, simple formula for case hardening metals, iron and gun metals especially.

Answer.—Articles to be case hardened are imbedded in calcined bone and charcoal or burnt leather, or some trade preparations answering the same purpose, the whole being inclosed in a cast iron box provided with a lid which is luted on. The whole is then placed in a furnace and subjected to a heat of from 1000 to 1200 or 1300 degrees for a time sufficient to thoroughly heat the articles. The articles are then dumped into a tank of water. By this means a carbonization takes place in the iron, the carbon being supplied by the imbedding material. The depth of hardening depends almost entirely upon the time the articles are left in the furnace. The mottled effect sometimes called peacock colors seen on some finished steel articles may be produced by the introduction of pieces of leather distributed irregularly about the piece to be hardened.

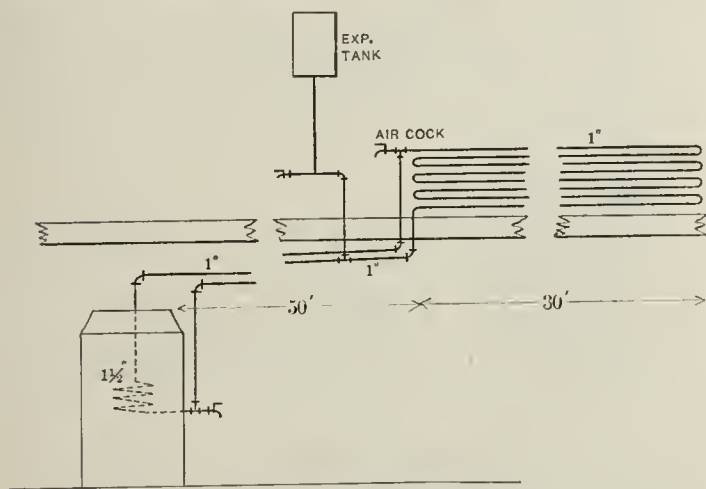
FASTENING CORRUGATED IRON ROOFING.

From O. C. R., Grand Forks, B. C.—Will *The Metal Worker* kindly inform me what will be the best way to fasten corrugated iron roofing to the steel rafters of iron frame buildings? We are erecting one here for a smelting company and have to fasten corrugated roofing to a 2 x 3 inch angle iron. Is there some clamp used for this purpose? We shall be glad to receive any information that will aid us in doing this work.

PIPE COIL AIR BOUND.

From H. E. F., Heuvelton, N. Y.—I submit herewith a sketch of a hot water system which does not work, and I shall be glad to have the Letter Box or some of its readers help me out. Sometimes the water will circulate, but usually it will back up in the return pipe and rattle. The heating coil in the furnace is 18 inches in diameter and makes three complete circles. It is made of 1½-inch pipe, and connected with the pipe coil 50 feet distant by 1-inch pipe. The radiator is composed of eight runs of 1-inch pipe, 30 feet long, made into a trombone coil with close return bends. This pipe radiator has a pitch of 2 inches in its 30-foot length. The expansion tank is connected with the return pipe as shown, and has a faucet in it so that hot water can be drawn for domestic use.

Note.—We shall be glad if our readers will give their views as to the cause of this trouble. Meantime we think that if our correspondent will examine the different runs



Pipe Coil Air Bound.

of the pipe coil, he will find that air has accumulated in some of them to such an extent as to interfere with the circulation. Better satisfaction would probably have been derived from the use of a miter coil made with manifolds instead of the coil used. Then the 1-inch pipes would have more readily freed themselves from air. Owing to the long run from the furnace to the coil a 1½-inch supply and return pipe should have been used, which would have aided in the heating.

PATTERN FOR A ROUND CRUTCH.

From Tinsmith, New York.—I want to make a crutch that is round, and wish that some reader of *The Metal Worker* would be kind enough to explain the laying out of the pattern. I have learned to lay out the pattern for a crutch of the shape described in *The Metal Worker* of October 5, but I cannot construct one that is round.

Note.—Problem 207 in "The New Metal Worker Pattern Book" covers the case in question. This is a pattern for a Y consisting of two tapering pipes joining a larger pipe at an angle, all these pipes being round.

NAME AND ADDRESS WANTED.

Will the correspondent who sends us an interesting communication under the pseudonym of "Kicker" furnish us, for our own information and not for publication, with his name and address, as required by the conditions printed at the head of this department?

The Mineral Production of the United States.

According to a report issued recently by the United States Geological Survey, the total value of minerals of all kinds produced in the United States in 1900 was \$1,070,108,899. The total production for 1899 was \$1,211,361,861, and for 1898 \$861,751,017. The total value of the metallic products was \$552,418,627, the nonmetallic \$516,690,262, and estimated value of mineral products, unspecified, \$1,000,000.

Among the more important minerals there were 13,789,242 long tons of pig iron produced in 1900, with a value of \$259,944,000, as against 13,400,735 long tons in 1899 and a value of \$234,725,754. There was a total of

363,735,265 tons of coal, anthracite and bituminous, with a value of \$306,890,364, as against 252,115,387 tons, valued at \$276,147,056, in 1899.

Other figures of some of the leading metals and minerals, as officially announced, are as follows:

Copper, 606,117,166 pounds; value at New York City, \$98,494,039.

Lead, 270,824 short tons; value at New York City, \$23,561,688.

Zinc, 123,886 short tons; value at New York City, \$10,654,196.

Quicksilver, 28,317 flasks; value at San Francisco, \$1,302,586.

Aluminum, 5,200,000 pounds; value at Pittsburgh, \$1,716,000.

Antimony, 1750 short tons; value at San Francisco, \$346,980.

Nickel, 9715 pounds; value at Philadelphia, \$3886.

Platinum, 400 troy ounces; value (crude) at San Francisco, \$2500.

Bituminous coal, 212,513,912 short tons; value, \$221,133,513.

Pennsylvania anthracite, 51,221,353 long tons; value, \$85,757,851.

Natural gas, value, \$23,606,463.

Petroleum, 63,362,704 barrels; value, \$75,752,691.

Corundum and emery, 4305 short tons; value, \$102,715.

Grindstones, value, \$701,121.

Mineral paints, 72,222 short tons; value, \$881,363.

Zinc white, 48,840 short tons; value, \$3,667,210.

Asbestos, 1054 short tons; value, \$16,310.

Asphaltum, 68,429 short tons; value, \$491,598.

Bauxite, 23,184 long tons; value, \$89,676.

Graphite, crystalline, 5,507,855 pounds, and amorphous, 611 tons; total graphite value, \$197,579.

Mica, 456,393 pounds of sheet; value, \$92,758, and scrap, 5453 tons; value, \$54,302.

Delicate Measurements.

It requires but a glance at the catalogue of a manufacturer of measuring instruments to show that in order to be abreast of the times it is necessary to measure iron and steel used in the construction of delicate machinery to the 1-1000 inch, and in exceptional cases to 1-10,000. This is not difficult to talk about, says the *Tradesman*, but when a mechanic begins to put the theory of such fine measurements into practice great care is necessary in order to secure satisfactory results.

Everybody knows that heat expands and cold contracts metals, but for ordinary purposes nobody thinks of taking this into account. If an iron rod is to be made 3 feet long, to be used for some parts of an engine valve gear, it is not customary to state the temperature at which it must measure 3 feet. If it is 36 inches long at 32 degrees F. it certainly will be longer than 36 inches at 74.

Where very great accuracy is imperative and two rods must be the same length, they must be brought to the same temperature and kept there. If the thumb of a person in good health is laid upon the bulb of a thermometer, the mercury will begin to rise at once, and if a brass rod 2 feet long at a temperature of, say, 40 or 50 is grasped firmly in both hands, and held for a few minutes, the heat so imparted to it will change its length enough to be objectionable for very fine work.

Removing Rust and Grease from Marble.

As most of our readers are doubtless aware, says the *Decorators' Gazette* of London, rust spots on marble are caused, as a rule, when articles made of iron are laid on the marble when it is wet, or allowed to remain there when the atmosphere is in a humid condition. These spots penetrate somewhat deeply, as marble is very porous, and can be effaced only by rubbing the marble sufficiently deep to remove the spots, and then repolishing the surface. As even the weakest acids will destroy marble such radical treatment cannot be entertained, or oxalic acid would immediately suggest itself as the correct remedy.

Grease spots from whatever cause, or the marks made by touching with soiled hands, can be removed by applying to the surface a stout paste made of equal parts of slacked lime and white pipe clay mixed with water, or calcined magnesia and white pipe clay will do equally as well. The paste must be applied in a thick layer all over the affected surface, and there permitted to remain for a couple of days, during which time it must be frequently moistened with water, and only allowed to dry after the full two days are passed, when it can be easily removed by rubbing with a soft cloth. Then the surface should be polished with the finest bolted whiting, and a piece of soft leather. This treatment cannot be applied to imitation marbles.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and weak.
Copper prices are well maintained, spot Lake is scarce.
Pig Lead is quiet and unchanged.
Spelter is very firm, with a good demand.
Antimony is unchanged.
Nickel continues firm with good demand.
Aluminum is active at former prices.
Tin Plates are in moderate demand for early delivery; Cokes are slightly lower, also Terne Plates.
Sheets are still scarce and strong with heavy demand.
Old Metals are quiet and unchanged.
Sheet Copper is moving well, with prices firm.
Sheet Zinc is in moderate demand and unchanged in price.
Foundry Iron is in active demand, with prices quite firm.
Hardware continues to move in good volume, with prices generally firm.
Plumbers' Supplies are active, and prices rule steady and strong.
Cast Iron Sinks are likely to advance in price on probable formation of a pool in these goods.
Wrought Iron Pipe prices are unchanged, with some scarcity still prevailing.
Sanitary Earthenware is in heavy demand and prices firm.
Solder has been reduced 1c. a lb.
Registers are stiffer in price.
Shot is firm.
Wire Nails are in good demand at unchanged prices.
Cut Nails are rather scarce; prices show no change.
Wire continues firm and in heavy demand.
Window Glass is in moderate demand at unchanged prices.
White Lead is firm and demand is active.
Linseed Oil is scarce and steady in price.
Spirits Turpentine has advanced $\frac{1}{2}$ c. a gallon.

METAL MARKET.

NEW YORK, October 18, 1901.

Pig Tin.—As far as the actual consuming business was concerned, the market during the past week was very quiet. During the period of the recent declining market most of the large consumers covered their requirements for the balance of this year, and the smaller consumers are, as usual, buying only what they actually require for the filling of business in hand. The market itself was a little firmer early in the week, owing to an advance in prices in London, but settled down again into a weak and unsettled condition on Thursday, in consequence of depressing advices from the other side and the absence of any active buying. Straits Pig in small lots is quoted at 25 $\frac{3}{4}$ c. to 26c. per lb.

Copper.—Lake Copper for spot delivery is now scarce, and consumers find themselves forced to pay the full price demanded by the principal producers. Only small lots, however, are changing hands at the high figures. The large consumers are of the opinion that the market will certainly not advance, and are getting along with just as small a stock of Copper as possible. While it is authoritatively announced by those in touch with the great producing interests that there will be no decline in the price of Copper before January 1, an impression still prevails in the trade that prices may recede before a great while, and this serves to keep the market somewhat unsettled. Lake Ingot in small lots is still quoted

at 17 $\frac{1}{4}$ c. to 17 $\frac{1}{2}$ c. per lb., and Casting Copper at 16 $\frac{3}{4}$ c. to 17c. While the production of Copper in the United States during September is about the same as for the corresponding period of last year, that of the reporting mines of Europe has increased from 7839 tons for September, 1900, to 9479 tons for this year, an increase of 20 per cent., which is regarded by the trade as of considerable significance.

Sheet Copper.—The demand for Sheet Copper keeps up in satisfactory volume. Prices continue firm on the basis of 21c. per lb. for moderate sized lots from store.

Pig Lead.—No change has taken place in this market, which is decidedly quiet. Prices remain unchanged from those ruling for some time past. American Pig in small lots is quoted at 4.62 $\frac{1}{2}$ c. to 4 $\frac{3}{4}$ c. per lb. St. Louis advices report the Pig Lead condition in that market as unchanged, with a good demand and no variation in prices.

Spelter.—This metal continues to grow firmer. The consumption throughout the country is reported to be good, and while there may be some manipulating influence behind the present upward movement, no disposition is shown in any quarter to retard its progress. Producers consider that the price of Spelter has been so low for the last two or three years that any advance would be welcome, no matter how it comes. Good Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. A report which is creating interest in the trade is to the effect that the Lanyon Zinc Company of Iola, Kan., are building a large Sheet mill, and will enter the market with Sheet Zinc. It is expected to have the mill turning out its product by the end of this year. St. Louis advices report a steady and large demand for Spelter and prices advancing, with apparently no diminishing of the buying power.

Sheet Zinc.—No change has taken place in the market for this material. Jobbers are quoting 600-lb. cask lots at 6 $\frac{3}{4}$ c. per lb., and smaller quantities at 7c.

Antimony.—Is unchanged, Hallett's being quoted in small lots at 8 $\frac{1}{2}$ c. to 9 $\frac{1}{4}$ c. per lb., and Cookson's at 10 $\frac{1}{2}$ c. to 11c.

Nickel.—No change is reported in connection with this metal. Prices are firm, small lots being quoted at 60c. to 65c. per lb.

Aluminum.—An active demand continues, and prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—A moderate demand for spot and early deliveries is noted, but there is no particular snap to the market. A few shipments have come into the Eastern market from the American Tin Plate Company's mills since they started up. The mills appear to be working almost exclusively upon Coke Plate for canners' use. No Charcoal or Terne Plates have made their appearance so far. Meanwhile the scarcity of stocks in jobbers' hands continues as pronounced as ever. The American Tin Plate Company announced this week that they will take orders for the first quarter of next year at unchanged prices. While retail quotations are still merely nominal, a fair average quotation for American Bessemer Coke Plates, I C, 14 x 20, delivered in moderate sized lots in New York or corresponding points, would be \$6.50 to \$6.75 per box. The market for Welsh Plates scored another decline during the week.

Sheets.—The demand for Sheets continues. The bulk of the mills are out of the market as sellers for delivery during the rest of the year. A good deal of tonnage in Sheets has been booked for next year, and the outlook promises that the Sheet mills, as a whole, will have plenty of work to keep them busy throughout the winter months. Jobbers in this section are complaining of the difficulty of securing enough supplies to meet the de-

mands of their customers. Deliveries from the mills are coming in very slowly, and as a rule are sold out before they are received. Jobbers' prices on Black Sheets in moderate sized lots are unchanged at 4.15c. to 4.20c. for No. 27, One Pass, Colled Rolled Soft Steel Sheets. Galvanized Sheets are quoted at 65 per cent. off the list.

Chicago advices are as follows: Although the mills appear to be making better deliveries, the supply of Black Sheets is not yet adequate to the necessities of consumers in this territory. Scarcity is also felt elsewhere, as indicated by orders received here for shipment from Chicago stocks, such shipments being made to Pittsburgh among other Eastern points. Prices of Black Sheets are still arbitrary, depending to a great extent on the condition of stocks, but may be quoted on a basis of 4c. to 4.10c. for No. 27. A stronger demand is experienced for Galvanized Sheets, and assortments are again badly broken, some of the leading jobbers finding Standard sizes running very short. Small lots are quoted at 65 off.

Old Metals.—The market for Old Metals of other descriptions is quiet, but prices are well maintained. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points.

Heavy Copper.....	per lb. 14¾c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¾c.
Light Brass.....	per lb. 7½c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.
Tin Plate Scrap, per gross ton.....	\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.25 to 7.50
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—With the exception of one transaction, involving about 6000 tons of Iron, no sales of any magnitude are reported in this market. Consumers are testing the market for the first and second quarters of next year, but are apparently unwilling to pay current prices. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, 15 to \$15.50; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$14.75 to \$15; No. 2 Soft, \$14.50 to \$14.75; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—A good, healthy trade is in progress, which keeps sales agents quite busy, although the demand is not so brisk as during the preceding three or four weeks. Numerous buyers are coming into the market, and placing orders for moderate quantities for delivery during the opening months of the coming year. Quite a sharp demand is noted for Iron for immediate shipment. Spot Iron is very scarce, and it is particularly difficult to secure Foundry grades. No complaint is heard with regard to prices. The Southern furnace companies are apparently maintaining the advance recently made, while sellers of local brands have marked up their prices slightly. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.25 to 16.00
Local Coke Foundry, No. 2.....	14.75 to 15.25
Local Coke Foundry, No. 3.....	14.25 to 14.75
Local Scotch, No. 1.....	15.25 to 16.00
Ohio Strong Softeners, No. 1.....	16.00 to 16.50
Southern Silvery, according to Silicon.....	15.40 to 15.65
Southern Coke, No. 1.....	15.15 to 15.40
Southern Coke, No. 2.....	14.40 to 14.65
Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—The market holds its own very satisfactorily. Sales have been at a fair average of prices compared with those of the past two or three weeks, but it cannot be said that the upward tendency has made much headway. Makers, however, are so well sold up that there is no need of shading prices at present, although it is a seriously considered question whether or not it should be done on next year's shipments. Sales are being made for this year's shipment at about \$14.50 for No. 2 Plain, and \$15 for No. 2 X, with occasional sales at 50c. more. The general range for the entire market is about as follows for city and nearby deliveries,

and from 25c. to 50c. less at points within a radius of 100 miles South or West: No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.50 to \$14.75.

PITTSBURGH.—The heavy purchases of Iron by the United States Steel Corporation and other Steel interests have cleaned up the surplus material for October and November, and the market is very strong. There have been heavy purchases of Foundry Iron for the last quarter of this year, also for next year, when prices were lower and the market has advanced materially. We quote No. 1 Foundry at \$15 to \$15.25; No. 2, \$14.50 to \$14.75, and No. 3 at \$14 to \$14.25, all f.o.b. Pittsburgh.

CINCINNATI.—The situation in the Pig Iron market is practically unchanged from what it was a week ago. The main body of business has been in Foundry Iron, for which a large number of orders, ranging from 700 to 800 tons down, have been placed. There is practically but one price for Southern Iron, and that is on the basis of \$11, Birmingham, for No. 2. Almost all the business transacted represents contracts covering the first half of next year. There is a good strong demand, and in some cases an urgent demand, for immediate delivery of Iron, but it is very scarce, and, in fact, almost impossible to secure any of the popular grades for delivery within the next three months. The outlook for the coming week is for a continuation of the present good business, and the whole situation may be classed as excellent. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$14.60 to 15.00
Ohio Silvery, No. 2.....	14.10 to 14.60
Lake Superior Coke, No. 1.....	15.10 to 15.60
Lake Superior Coke, No. 2.....	14.60 to 15.35
Lake Superior Coke, No. 3.....	14.10 to 14.85

ST. LOUIS.—The Pig Iron market is now in a state of great activity. While the tonnage of individual orders is not generally on an unusual scale, there has been a marked increase in this direction since our last report. It is said that the bulk of the business now being placed is for delivery by the end of the year, and some difficulty is experienced by the furnaces to promptly fill this demand. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 2 Foundry.....	14.00 to 14.25
Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

CHICAGO REPORT.

Scrap Iron and Steel.—The supply is increasing, and prices are expected to decline, although a fair demand prevails. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$12.00
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.50 to 10.00
Old Gas Pipe and Boiler Tubes.....	11.00 to 11.50
Cast Borings.....	4.50 to 5.00
Turulings.....	9.50 to 10.00
Horseshoes.....	to 13.00

Old Metals.—Trade is quiet. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14½c.
Copper Bottoms.....	13 c.
Copper Clips.....	14 c.
Red Brass.....	13¼c.
Yellow Brass.....	9¼c.
Red Brass Borings.....	11¼c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3½c.
Zinc.....	2 80c.
Tin Foil.....	22 c.
Pewter, No. 1.....	17½c.
Pewter, No. 2.....	14 c.

Old Rubber.—The movement is fair, with some change in values. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Alr Brake Hose.....	42.50	.....
Rubber Shoes.....	.....	5½c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The demand is very good, but the supply is running short, owing to the decided scarcity of cars for shipping from the mines. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

The business situation shows but little change from week to week. There is a steady business being done by the retail trade, and this is a good indication of the general condition, for when trade is satisfactory with this class of merchants it indicates a healthful state in general. With the coming of fall weather there is throughout the country a quickening in the demand for fall and winter goods, and jobbers report a very satisfactory activity in these lines, but with difficulty in having their wants adequately supplied, as there is more or less scarcity in many directions. The pressure, however, is relaxing on many kinds of heavy goods, especially those the production of which was interfered with by the strike. The market has witnessed but little change in prices within a few weeks, except in special instances where combinations for one reason or another have come to grief. While values, as a rule, are steady, and merchants are buying in such quantities as their trade requires, they are not disposed to speculate, anticipating that goods are not likely to be materially higher. Most merchants are conducting their business with enterprise, but still conservatism, on the theory that present conditions, without important change, are likely to continue into the new year. They do not find justification for buying in excess of their wants for the near future, but place orders to this extent with confidence. The jobbers being, as a rule, pretty well supplied with goods, the demands which are being made by them upon the manufacturers are not especially heavy, but stocks in manufacturers' hands also are light and broken, and in many kinds of goods the makers are still behind their orders.

NOTES ON PRICES.

Cast Iron Sinks.—It was learned this week that an effort is being made to place the Cast Iron Sink business in a more profitable position than that existing recently. The scheme is said to be to get all of the manufacturers of Cast Iron Sinks and goods of a kindred nature into a "pool," which will regulate prices and production in a manner similar to that by which the Cast Iron Soil Pipe business is controlled. Considerable progress, it is said, has been made in this direction, and if the efforts of the promoters of the deal are successful the price of Cast Iron Sinks of all kinds and sizes, Sink Backs and Legs, Slop Hoppers and Stands, Brackets, Wash Tray Legs, Traps, Cesspool Grates, Stench Traps, Cesspool Plates and Strainers, and, in fact, all goods of this nature will be likely to undergo a material advance before the first of the new year. We understand that the manufacturers have come to an agreement with the promoters to make no new contracts for Sinks to be delivered after January 1, 1901. It is also understood that no large orders are to be taken prior to that time. The manufacturers have made returns of their production and allotments of new business will be made to the members of the pool according to the size of their past business in this line.

Wrought Iron Pipe.—The condition of the Wrought Iron Pipe market is very similar to that of last week. Prices at the mills and with the jobbers remain unchanged. There is more Pipe in the market this week, but this is offset to a great extent by a larger demand than then prevailed. The bottom seems to have been reached by the jobbers, and the mills being well sold out will wait for some time before making any change either way.

Sanitary Earthen Ware.—Judging from reports of the Trenton, N. J., potters, the Plumbers' Earthen Ware business is in a flourishing condition. The kilns are being kept in continual use and the manufacturers, as a rule, are behind with their orders. The association formed two years ago is still in existence, and it is understood that there is not a single pottery outside of it. This condition of affairs applies, too, to the Western potteries, who are also affiliated with the Trenton Association. Prior to the organization of the Potters' Association the business was in a very unsatisfactory condition. Prices were ruinously low, claims and allowances were the order of the day, and the demand was not nearly in as good volume as it is at the present time. The kiln capacity of the Trenton potteries has been nearly doubled in the past two years and more kilns are being erected in anticipation of an increased demand for newer and more modern sanitary appliances. The pottery business has been so successful since the formation of the association that it is believed to be certain that a renewal of the present agreement will be made to maintain the current prices for another year.

Solder.—A further reduction has been made by the manufacturers of Solder, in sympathy with the decline in Pig Tin. Half and Half Solder, guaranteed, in small lots, is now quoted at 17 to 17½ cents, and No. 1, 14 to 15½ cents per pound.

Registers.—The market for Registers and Ventilators is in an improved condition, and most of the manufacturers are announcing higher base discounts, 60 and 10 per cent. being the figure named by leading makers. Some others, however, are naming lower discounts, and the market is thus not entirely even. The prices which have ruled on this line for some time are referred to by the manufacturers as unprofitably low, and with the good demand which prevails, they are endeavoring to realize more substantial returns.

Shot.—The market for Shot is in better condition than for some time, and prices are being quite firmly maintained. The disturbance from the lower quotations made by jobbers has, to a good extent, ceased, as their stocks purchased at low prices are becoming exhausted.

Wire Chain.—The Bridgeport Chain Company, Bridgeport, Conn., manufacturers of Triumph and Brown Chains, and the Oneida Community, Kenwood, N. Y., makers of Niagara and Eureka Chains, have adopted a uniform price-list for the above brands of Chains, under date of September 16.

Nuts.—A meeting of the manufacturers of both Hot Pressed and Cold Punched Nuts was held October 15, and the following revised quotations adopted, which are subject to the usual abatement on large lots:

	Off List.
Hot Punched Square Blank Nuts.....	5.20
Hot Punched Hexagon Blank Nuts.....	5.80
Hot Pressed Square Tapped Nuts.....	5.00
Hot Pressed Hexagon Tapped Nuts.....	5.60
Cold Punched Plain Blank Square Nuts.....	5.00
Cold Punched Plain Blank Hexagon Nuts.....	5.30
C. T. & R. Blank Square Nuts.....	5.20
C. T. & R. Blank Hexagon Nuts.....	5.80
Cold Punched Plain Tapped Square Nuts.....	4.80
Cold Punched Plain Tapped Hexagon Nuts.....	5.10
C. T. & R. Tapped Square Nuts.....	5.00
C. T. & R. Tapped Hexagon Nuts.....	5.60

Wire Nails.—Wire Nails are meeting with an excellent demand at unchanged prices. Small lots at store are quoted in New York at \$2.60 per keg.

Cut Nails.—There is a general complaint among the Cut Nail mills of their inability to obtain Steel. This has resulted in delaying the shipments of Steel Nails,

with accompanying annoyance to the trade. The scarcity of Steel Nails has been so pronounced that in some instances buyers have been obliged to accept Cut Iron Nails as a substitute. Trouble in this direction has not been experienced in connection with Wire Nails, as most of the mills make their own Steel. The New York demand is referred to as fair, but jobbers complain of delayed shipments from mills. Small lots of Cut Nails from store are quoted at \$2.18 to \$2.30 per keg.

Wire.—The heavy demand for Plain Wire continues unchanged, the output of the mills being taken as fast as made. Prices are firm and only for very desirable orders at competitive points are any concessions in prices being made. Plain Wire in small lots is quoted at 2.60 cents, and Galvanized at 3 cents.

Window Glass.—The demand for Window Glass for the past few weeks has not been up to expectations. One explanation is that the weather has continued mild, so that dealers have not been called upon to supply the requirements that accompany the first decidedly cold weather. There was a general start of the co-operative Glass factories on October 15. The plants of the combine are expected to go into operation on November 1. Jobbers' quotations are unchanged at the discount of 80 and 20 per cent. for less than car lots from store.

White Lead.—The demand for White Lead in Oil continues in good volume. The scarcity of Oil has caused some inconvenience, although it has not reached any serious extent. In other than the local market irregularities in prices are reported. White Lead in Oil is quoted in a retail way at 7 to 7¼ cents per pound.

Linseed Oil.—The scarcity of spot Oil is still the prominent feature of the market. The crop of Flaxseed from the Northwest is from two to four weeks late in getting into the hands of crushers, who, in consequence, have been able to make only partial shipments of Oil contracted for early October delivery. The demand is active for small lots only, as buyers expect prices to be lower when present conditions change and the market settles. City Raw Oil is quoted in moderate sized lots at 66 to 67 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—While the local Turpentine market has been quiet owing to the absence of large buyers, a firmer tone in the South has caused prices to advance ½ cent per gallon. Business at this point is confined to jobbing lots. Retail quotations are 38½ to 39 cents per gallon.

Scrap Aluminum.

There seems to be considerable misunderstanding among metal dealers and others less directly connected with the aluminum trade as regards the matter of the value of aluminum scrap, says the *Aluminum World*. The price for aluminum scrap is, of course, set by the best informed buyers, and is always just sufficiently below the price of new metal to leave margin for remelting, cost of selling, and profit. The recent average market price paid for aluminum scrap by those dealers who are doing a considerable business in the light metal has been from 24 cents to 25 cents per pound, and as high as 26 cents. While this price has eased a trifle lately, scrap dealers who do not handle aluminum regularly, but who merely pick up a stray lot now and then, can hardly be considered an authority on the market quotation for aluminum scrap. The above quotations apply to pure aluminum scrap only, and not to alloyed or otherwise second-grade metal.

THE NEW JERSEY ZINC COMPANY have filed at Trenton, N. J., a mortgage for \$10,000,000, part of which is to secure the payment of an issue of 4 per cent. 25-year bonds. Four millions of dollars of this money is to be devoted to the development of property now owned by the company, while the remainder is to be used to secure new plants in the Western States. One of the schemes contemplated by the company is the completion of the town of Palmerstown, near Bethlehem, Pa., which

is being built around the site of a newly acquired Zinc mine. Palmerstown is named for the company's president, S. S. Palmer. A large plant is to be situated there, and many buildings are now in course of erection. The New Jersey Zinc Company control all the Zinc produced in the East, and are now reaching out to secure several Western mines.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED OCTOBER 18, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 98% Pure), in ingots for remelting.	37¢
Small lots.	35¢
100-lb lots.	35¢
Aluminum Sheet, B. & S. gauge.	
in lots of 50 lb or more.	
Wider than..... 6-in. 14-in. 24-in.	
And including..... 14-in 24-in. 30-in.	
No. 13 to 19.....	\$0.42 \$0.44 \$0.47
" 20.....	44 46 49
" 21 to 23.....	46 48 51
" 24.....	48 50 53
" 25.....	47 51 54
" 26.....	47 54 59
" 27.....	48 57 62
" 28.....	48 57 64
" 29.....	49 60 69
" 30.....	50 64 77

Note.—Lots of less than 50 lb 5¢ per lb extra.

Antimony—

Cookson.....	10¢@11¢
Hallett's.....	8¢@9¢
U.S.....	8¢@9¢

Brass, Roll and Sheet..15¢@20¢

Conductors—

Corrugated.	
Round or Square.—	
Galvanized 1/2 or more N'st'd.....	70¢@5¢
" Not Nested.....	70¢@2¢
" Plain Round, 1/2 or more.....	70¢@5¢
Nested.....	70¢@5¢
Galvanized, Plain Round, Not Nested.....	70¢@2¢

Spiral Riveted.

Galvanized.....	40¢
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Lake Ingot.....	17 1/4@17 1/2¢
Casting.....	16 1/4@17¢
Sheet and Bolt.....	21¢ per lb basis
Cold Rolled Sheets.....	22¢ per lb basis
Cold Rolled and Polished Sheets.....	23¢ basis
Planished Sheets.....	24¢ basis
Bottoms, Pits and Flats.....	25¢ basis

Eave Trough, Galvanized

Territory.....	L. C. L.
Eastern.....	75¢@10¢
Central.....	75¢@10¢
Southern.....	70¢@12¢
W. Western.....	70¢@10¢
Terms, 2% for cash.	

Eave Trough Mitres—

Lap or Slip Joint.....1st, 25¢

Elbows—Plain Adjustable—

Eastern List.....

Tin.....30¢

Galvanized.....30¢

Perfect Elbows.....40¢

Stove Pipe—

Four-Piece	
4 4 1/2 5 5 1/2 6-inch.	
No. 1, \$0.80 .85 .90 1.00 1.05 per doz.	
No. 2. .85 .70 .75 .80 .85	
No. 3. .60 .63 .65 .70 .80	

Elbows and Shoes—

Galvanized.....60¢

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

	One Pass, C. R.,	R. G.
	Soft Steel	Cleaned.
Nos. 14 to 16.....	3.80	3.85¢
Nos. 18 to 21.....	3.90	3.95¢
Nos. 22 to 24.....	4.00	4.05¢
Nos. 25 and 26.....	4.10	4.15¢
No. 27.....	4.20	4.25¢
No. 28.....	4.30	4.35¢

Russia, Planished, &c.

Genuine Russia, accord-	
ing to assortment.....	11¢@11 1/2¢
Do. Stained.....	8¢@10¢
Patent Planished. 11 A, 12; B, 11¢ net	

Galvanized.

Nos. 10 to 16.....	12¢
Nos. 17 to 21.....	13¢
Nos. 22 to 24.....	14¢
Nos. 25 to 26.....	15¢
No. 27.....	16¢
No. 28.....	17¢
No. 29.....	18¢
No. 30.....	19¢
86 in. 1¢ per lb higher.	

Lead—

American Pig.....	4.62¢@4.75¢
Bar.....	5 1/2¢@5 1/4¢
Pipe.....	2 1/2¢ off
Tin Lined Pipe.....	12 1/2¢@20¢ off
Block Tin Pipe.....	37 1/2¢@20¢ off
Sheet Lead, full rolls.....	7 1/2¢@20¢ off
Sheet Lead, cut.....	7 1/2¢@20¢ off
Old Lead in exchange, 4¢ per lb.	

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb.....60¢@65¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.....	6 1/2¢
Lots less than 500 lb.....	7¢
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	1/2¢
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	1¢
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	1 1/2¢
Lead, White, Dry in bbls.....	5 1/2¢
Lead, Red, bbls, 1/2 bbls, and kegs:	
Lots 500 lb or over.....	6¢
Lots less than 500 lb.....	6 1/2¢

Oils—

Linseed, City, raw.....	65¢@66¢
Linseed, City, boiled.....	67¢@68¢
Linseed State and West'n, raw.....	65¢@66¢

Spirits Turpentine—

In Southern bbls.....	38¢@39¢
In machine bbls.....	39¢@40¢

Putty—

In bulk.....	\$1.25
In bladders.....	2.25
In cans 12 lb to 25 lb.....	2.25
In cans 1 lb to 5 lb.....	3.25

Petroleum Products—

In Barrels (Barrel included)	
Stove Gasoline.....	12 1/2¢@13¢
Kerosene.....	13¢@13 1/2¢

Pipe, Drain—

.....40¢

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.	
Black Japanned.....	60¢@10¢@60¢@10¢@5¢
White Japanned.....	60¢@10¢@60¢@10¢@5¢
Nickel Plated.....	60¢@10¢@60¢@10¢@5¢
Bronze Finishes in Imitation of Gold,	
Silver, Copper or Bronze.....	60¢@10¢@60¢@10¢@5¢
Electroplated in Brass, Bronze or	
Copper.....	60¢@10¢@60¢@10¢@5¢
White Porcelain.....	60¢
Solid Brass and Bronze Metal.....	50¢

Roofing Material—

1 Ply Tarred Paper.....	20¢@27.00
2 Ply Tarred Paper.....	roll, 108 sq. ft.
3 Ply Tarred Paper.....	roll, 108 sq. ft.
Slater's Felt.....	roll 500 sq. ft., 50¢@60¢
Roofing Pitch.....	bbl. \$2.35

Rosin—

Common and Good—Strained.	
Rosin, C. & D.....	bbl. \$1.40 @ \$1.42
Rosin, E. & F.....	bbl. 1.55 @ 1.65
Rosin, G. & H.....	bbl. 1.70 @ 1.75
Rosin, I. & K.....	bbl. 1.80 @ 2.15
Rosin, M. & N.....	bbl. 2.60 @ 3.15

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

Pennsylvania:	According to size.
Best Bangor, 1/2 sq.....	\$3.25@3.50
No. 1 Bangor Ribbon, 1/2 sq.....	3.00@3.50
Pen Argyle, 1/2 sq.....	3.00@3.75
Peach Bottom, 1/2 sq.....	4.85@5.60
No. 1 Boys, 1/2 sq.....	3.35@3.55
No. 1 Chapman Keystone, 1/2 sq.....	3.25@4.25
Vermont:	
Sea Green, 1/2 sq.....	\$2.00@3.15
Purple, 1/2 sq.....	3.75@4.25
Unfading Green, 1/2 sq.....	3.25@4.50
Red, 1/2 sq.....	6.50@11.00
Maine:	
Brownville, Unfading Black:	
No. 1 quality.....	\$5.25@7.50
No. 2 quality.....	\$4.25@6.00

Soldier—

1/2 lb guaranteed.....	17¢@17 1/2¢
No. 1.....	14¢@15 1/2¢
Prices of Soldier indicated by private	
brands vary according to composition.	

Soldering Fluids—

	Per Pound.	Smaller Barrels
Concentrated Flux.....	4c	5c
Eureka Flux:		
Triple Strength.....	3c	3 1/2c
Extra Concentrated.....	4c	5c
Crystal.....	7c	
Gedney's Fluid.....	2c	
Lennox Fluid.....	2c	
Perfection Flux.....	3c	3 1/2c
Yager's Salts, 1 lb. bottles.....	each, 60¢	
5 lb. bottles, per lb., 40¢		

Soldering Coppers—

Per lb.....22¢@24¢

Spelter—

Western Spelter.....4 1/2¢@4.60¢

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.....50¢

Tin Pigs and Bars—

Banca pigs, 1/2 lb.....	26¢@26 1/2¢
Stralts, pigs, 1/2 lb.....	26¢@26 1/2¢
Stralts, in bars, 1/2 lb.....	27¢@27 1/2¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:	
IC, 14 x 20.....	\$7.75
IX, 14 x 20.....	9.25
IXX, 14 x 20.....	10.50
IXXX, 14 x 20.....	11.75
IXXXX, 14 x 20.....	13.00

Meyn Grade:

IC, 14 x 20.....	7.25
IX, 14 x 20.....	8.75
IXX, 14 x 20.....	10.00
IXXX, 14 x 20.....	11.25
IXXXX, 14 x 20.....	12.50

Allaway Grade:

IC, 14 x 20.....	6.75
IX, 14 x 20.....	7.85
IXX, 14 x 20.....	8.95
IXXX, 14 x 20.....	10.05
IXXXX, 14 x 20.....	11.15

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	
IC, 14 x 20.....	\$6.50@6.75
IX, 14 x 20.....	\$7.25@7.50

N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IO 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$3 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.....	\$17.50@18.00
About 80 lb coating.....	16.75@17.25
About 20 lb coating.....	14.75@15.25
About 15 lb coating.....	12.75@13.25
About 8 lb coating.....	11.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....	\$18.00
IXX, 14 x 28..(112 sheets).....	17.00
IXX, 14 x 31..(112 sheets).....	18.50

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.....	\$15.00
Steel Lock Frame, per doz.....	18.00
Daisy Improved pattern, 1/2 doz.....	18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896, 30¢@35¢	
Copper and Bronze, 8¢ per lb. list more than Brass.	
Seamless Brass Tubes, net list Feb. 6, 1899.	

Tin.....50¢

Galvanized.....50¢

Fittings for do.....40¢

Zinc—

600 lb casks 1/2 lb.....8 1/2¢

Per lb.....7 1/2¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
80 gal.....	65¢@10¢@70¢
85 and 40 gal.....	65¢@65¢@10¢
Other sizes up to 52 gal.....	60¢@60¢@10¢
52 gal. and above.....	60¢@60¢@5¢
Extra Heavy Boilers:	
18 to 52 gal.....	50¢@10¢@60¢
53 gal. and above.....	50¢@55¢

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks.....	65¢@65¢@5¢
Bath Cocks and Double Bath Cocks.....	65¢@70¢
Bibs.....	65¢@65¢@5¢
Bibs, Flanged.....	65¢@70¢

Fuller:

Bibs.....70¢@70¢@10¢

Basin Cocks, Nos. 1 to 4.....70¢@10¢@75¢

Bath Cocks, No. 4 1/2.....\$2.00 net

Ground Key Work:

Finished Bibs.....60¢@65¢

Rough Bibs and Stops.....65¢@70¢

Rough Stop and Stop and Waste

Cocks.....70¢@70¢@5¢

Rough Stop and Stop and Waste

Cocks, Patented.....65¢@65¢@5¢

Miscellaneous—

Basin Clamps.....60¢@65¢

Basin Plugs.....60¢@65¢

Chain Stays.....60¢@5¢@70¢

Iron Boiler Couplings:

Lead Pipe. Iron Pipe.

Plain Face, 1/2 set \$0.95 \$1.05

Ground Face, 1/2 set \$1.00 \$1.10

Sink or Bath and Wash Tray Plugs, 80¢@65¢

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air.....70¢@70¢@5¢

Gas Meter and Union Meter.....65¢@70¢

Steam.....65¢@70¢

Iron—

All Iron.....70¢@70¢@5¢

Iron with Brass Plugs.....65¢@70¢

Valves—

Brass—

Check.....70¢

Garden Hose.....65¢@10¢@70¢

Gate.....65¢@65¢@10¢

Globe and Angle, hose outlet.....65¢@65¢@10¢

Globe, Angle and Cross.....65¢@10¢@70¢@5¢

Horizontal, Vertical

ALPHABETICAL LIST OF ADVERTISERS.

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American Furnace Co..... 22	Cory, Uzal & Co..... 30	Harrington & King Perfo- rating Co..... 69	Morgan & Co..... 87	Shepard, Sidney & Co..... 28
American Radiator Co..... 6	Crosby Steam Gage & Valve Co..... 1	Hart & Crouse Co..... 20	Mueller, L. J. F'ce Co..... 22	Sheppard, Isaac A. & Co..... 1
American Sheet Steel Co....1&80	Curtis & Curtis Co..... 36	Hessler, H. E. Co..... 33	Munsell, E. & Co..... 30	Silver & Co..... 74
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Connors, Wm. Paint Mfg. Co. 78	Gurney & Co..... 24			Zero Valve & Brass Mfg. Co.. 37
Cooney & Geiger..... 77				

PERFORATED METALS

STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals
PERFORATED AS REQUIRED for

Grain Cleaning and Mining Machinery, Woolen, Cotton, Paper and Pulp Mills, Rice,
Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses,
Stone, Coal and Ore Screens, Brick and Tile Works, Filters, Spark Arresters, Gas
and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

Standard Sizes Perforated Tin and Brass Always in Stock.

The Harrington & King Perforating Co.,

Eastern Office, 234 Pearl St., NEW YORK.

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International Heater Co., Utica, N. Y.
- Agate Nickel-Steel Ware.**
Lalanc & Grosjean Mfg. Co., 19 Cliff St., N. Y.
- Aluminum Ingots.**
Janney, Steinmetz & Co., Phila., Pa.
- Aluminum Scrap Buyers.**
Janney, Steinmetz & Co., Phila., Pa.
- Aluminum Sheets.**
Janney, Steinmetz & Co., Phila., Pa.
- Architectural Ornaments.**
Edwards Mfg. Co., Covington, Ky.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
- Black Plates.**
American Tin Plate Co., New York.
- Boilers, Range.**
Koven, L. O. & Bro., 50 Cliff St., N. Y.
- Brass Goods.**
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.
- Brass Sheets, Rolls, &c.**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- CanMakers' Tools and Machines.**
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.
- Castings, Iron.**
Cheney, S. & Son, Manlius, N. Y.
- Ceilings, Metallic.**
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
Dowman Mfg. Co., Atlanta, Ga.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
- Cellar Drainers.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Coal Vases.**
Cincinnati Stamping Co., Cincinnati, Ohio.
- Coils.**
National Pipe Bending Co., New Haven, Conn.
- Conductor Pipe and Elbows.**
Berger Bros. Co., Philadelphia, Pa.
Clark, Quilen & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.
- Copper, Roofing and Cornice.**
Gumme, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Cornice Machinery.**
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
- Cornice Work, Galvanized Iron.**
Garry Iron & Steel Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.
- Couplings. (See Pipe Couplers.)**
- Cut Offs, Rnin Water.**
Cooney & Gelger, Indianapolis, Ind.
Klaner Mfg. Co., Dubuque, Iowa.
- Damper Clips.**
Brohard Co., Phila., Pa.
- Dampers.**
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Troy Nickel Works, Troy, N. Y.
- Die Stocks.**
Curtis & Curtis Co., Bridgeport, Ct.
- Drop Hammers.**
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.
- Dumb Waiters.**
Energy Elevator Co., Phila., Pa.
- Eave Troughs.**
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quilen & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.
- Eave Trough Hangers.**
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.
- Eave Trough Machines.**
Marlin & Co., Pittsburgh, Pa.
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- Enameled Ware.**
Lalanc & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Faucets.**
Clark Novelty Co., Rochester, N. Y.
- Fire Brick.**
Donaldson, O. G. & D. H., Buffalo, N. Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.
- Fire Pots.**
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.
- Fire Sets.**
Troy Nickel Works, Troy, N. Y.
- Furnace Cement.**
Perkins, J. L. & Co., Chicago.
- Furnace Pipe and Fittings.**
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh, Pa.
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Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Buckwalter Stove Co., Roversford, Pa.
Cory, Uzal & Co., 210 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Mace Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Schaffer, John P., Pittsburgh, Pa.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.
Wireton Heating Co., Blue Island, Ill.
Wood & Bishop Co., Bangor, Me.
- Gas Fuel.**
Williams Stove Lining Co., Taunton, Mass.
- Gas Heaters. (See Stoves and Ranges, Gas.)**
- Gas Machines.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Granite Steel Ware.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Groovers.**
Wheeler, W. A., Indianapolis, Ind.
- Heat Regulators.**
Howard Thermostat Co., Oswego, N. Y.
Wireton Heating Co., Blue Island, Ill.
- Heaters, Steam and Hot Water.**
American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 98 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
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Mace Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Stove Co., Norwich, Conn.
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Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
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Galesburg Cornice Works, Galesburg, Ill.
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Palermo Mica Co., 115 Beekman St., N. Y.
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McClure & Co., Pittsburgh, Pa.
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Follansbee Bros. Co., Pittsburgh, Pa.
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Ohl, Geo. A. & Co., Newark, N. J.

Paok, Stow & Wilcox Co., 27 Murray St., New York.

Stiles & Parker Press Co., Brooklyn, N. Y.

Weiss, H. & Co., 20 Cliff St., N. Y.

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Follansbee Bros. Co., Pittsburgh, Pa.

Gumme, McFarland & Co., Phila., Pa.

McClure & Co., Pittsburgh, Pa.

Meurer Bros. Co., Brooklyn, N. Y.

Osborn, J. M. & L. A., Cleveland, Ohio.

Taylor, N. & G. Co., Philadelphia, Pa.

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Vulcan Metal Refining Co., 151 Cedar St., N. Y.

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Moran & Co., Chicago.

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Dowman Mfg. Co., Atlanta, Ga.
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Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
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National Enameling & Stamping Co., 74 Beekman St., N. Y.

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Colwell Lead Co., 68 Centre St., N. Y.
Zoro Valve & Brass Mfg. Co., Buffalo, N. Y.

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Donaldson, O. G. & D. H., Buffalo, N. Y.

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Kemp, C. M. Mfg. Co., Baltimore, Md.

Whitewashing Machine.

Ripley Hardware Co., Graton, Ill.

Wind Gates.

Miner & Peck Mfg. Co., New Haven, Conn.

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THE METAL WORKER.

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HELP WANTED.

We have two specialties for New York State trade, a new square parlor stove and new modern oak stoves; inducements prominent; we want capable SALESMAN for this territory. "New York State," care *The Metal Worker*, New York. Oct. 19

An old established retail stove, furnace and house furnishing goods house in Eastern New York State are looking for a first-class SALESMAN for on the floor; must have experience and come well recommended. "Retail," care *The Metal Worker*, New York. Oct. 19

Two TINNERS and SLATERS; good wages, steady work. P. H. Bayley, Sidney, Ohio. Oct. 19

A good BRASS and COPPER PLATER please correspond. Ohio Foundry Company, Steubenville, Ohio. Oct. 19

A first-class TINNER; one who is used to furnace work; wages, \$2.50 a day. Holles & O'Donnell, Cranford, N. J. Oct. 19

Young German-American about 28 years of age who can speak and write German, with thorough knowledge of bookkeeping, for manufacturing company abroad. "American Manufacturer," care *The Metal Worker*, Chicago. Oct. 19

A practical CUPOLA MAN to take full charge of 75-ton cupola located in New York State; steady work; state age and wages expected; send letters of recommendation from former or present employer; American preferred. "Cupola," care *The Metal Worker*, New York. Oct. 19

CORNICE and SKYLIGHT MAKERS; will pay good wages for good men; none others need apply; eight hours; come ready to go to work. The G. Drouve Company, Bridgeport, Conn. Oct. 19

Two or three competent, first-class TINNERS wanted at once at permanent work the year round; must be sober and reliable; none need apply who are not worth at least \$1.50 per day. W. H. Ferber, secretary of the New London Hardware Company, New London, Wis. Oct. 19

At once, a PLUMBER and TINSMITH; will pay \$2.50 per day; steady work to a good, sober man that can do my work; do not write if you can't come at once. Geo. W. Gibney, Pawling, N. Y. Oct. 19

A good TINSMITH and SHEET METAL WORKER for inside and outside work and general jobbing; a steady position to the right man. Bowen Bros., Utica, N. Y. Oct. 19

TINSMITH and FURNACEMAN wanted at once; put up furnaces, make furnace trimmings, put up stoves; very little roofing done; apply at once. Matern Stove & Furnace Company, Sandusky, Ohio. Oct. 19

First-class NICKEL PLATER; a man competent and one who has had charge of nickel department of a stove plant; there is position open for strictly capable man. "Metal," care *The Metal Worker*, New York. Oct. 19

FOREMAN TINNER with experience in tinning all kinds of sheet malleable and wrought iron and able to take charge of tinning room; write stating experience. "Foreman Tinner," care *The Metal Worker*, New York. Oct. 19

First-class CORNICE MAKERS wanted at once; apply to Williams & Manogue, foot of Grand street, Troy, N. Y. Oct. 19

We want at once one TINSMITH and one PLUMBER. Carr & Spaulding, Newport, Vt. Oct. 19

First-class STEAM and HOT WATER FITTERS, PLUMBERS and TINSMITHS wanted at once; men who understand all branches preferred; good wages paid. J. H. Yates & Son, Matteawan, N. Y. Oct. 19

At once, two first-class CORNICE and SKYLIGHT WORKERS for in and outside work; no foreman wanted. Robert C. Reetz, Pawtucket, R. I. Oct. 19

At once, three nonunion PLUMBERS; must be strictly sober and reliable. Helena Tin & Plumbing Company, Helena, Ark. Oct. 19

First-class TINSMITH; must be good furnace workman. O'Toole Bros., Clinton, Mass. Oct. 12

First-class TINNERS, CORNICE MAKERS and SHEET METAL WORKERS; give references, experience and wages expected. Write to St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn. Oct. 12

MOLDERS wanted; steady work for good floor and bench molders on stove plate and other light work; new modern shop. Apply to A. J. Lindemann & Hoverson Company, 348 Florida street, Milwaukee, Wis. Oct. 12

BOOKKEEPER and GOOD FIGURER in cornice business. "Cornice Maker," care *The Metal Worker*, New York. Oct. 12

A first-class STOVE SALESMAN; must be experienced. Apply by letter with full information and references, Rathbone, Sard & Co., Aurora, Ill. Oct. 12

A first-class PLUMBER and STEAM FITTER; one who can do good work; must be sober and able to handle his work; will give a steady position by the year, nine hours per day, to a man who will suit. Charles O. Murphy, 259 Central avenue, Norwich, Conn. Oct. 12

Plumbing supply house desires the services of a competent young man to check invoices and be generally useful in office. Address in own handwriting, stating age, experience, references and salary expected, "Lavatory," care *The Metal Worker*, New York. Oct. 12

TINNER, PLUMBER and all around man; one who has had experience in store; only sober and reliable man wanted. F. E. Kinsman, Westfield, Pa. Oct. 12

A good all around man who understands and can do TINNING, PLUMBING and STEAM HEATING; must be strictly honest and sober and able to help in store at times; steady job and good wages to right man; none but experienced men need apply; answer, with references, Louis Stanton, Frostburg, Md. Oct. 12

SALESMAN; one thoroughly acquainted with gas, gasoline stoves and furnace trade; state past experience, present employment and salary expected. Shelby Stove & Mfg. Company, Shelby, Ohio. Oct. 12

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A STEEL RANGE WORKER; competent and reliable. Enterprise Stove Company, Vincennes, Ind. Oct. 12

At once, two good TINNERS; all around jobbing, furnace work, &c.; steady work; state wages and experience. I. W. Bennett & Son, Gananoque, Ontario, Canada. Oct. 12

STOVE PLATE PATTERN MAKER, STEAM and HOT WATER MOLDERS and STOVE PLATE MOLDERS. Rossmore Company, Peekskill, N. Y. Oct. 12

A situation is open for a first-class galvanizer and tinner, competent to act as ASSISTANT FOREMAN and in the absence of the foreman to take full charge of the plant; applicant must understand tinning cast iron and be able to turn out job galvanizing rapidly and of the very best workmanship; no intemperate man or one that considers the business a secret and himself the only possessor need apply; state experience and wages wanted, which must be reasonable. Address for two weeks C. V. Henderson, care *The Metal Worker*, New York. Oct. 12

At once, a first-class general man; one who can do plumbing, steam and hot water heating. W. R. Walker, Torrington, Conn. Oct. 12

At once, two TINNERS; steady work; state age and wages expected. James Fitzgibbon, Red Bank, N. J. Oct. 12

SLATERS at once; steady work for reliable men; write or come at once. A. C. Hathorne, Burlington, Vt. Oct. 12

A good, sober and industrious TINSMITH and PLUMBER who is used to general jobbing as comes to a country shop; one who can do furnace work; give age, references and wages expected. Sargent & Fulton, Sunapee, N. H. Oct. 12

At once, good TINSMITHS. Address Lock Box 107, Rondout, N. Y. Oct. 12

Yearly contracts to two first-class TINSMITHS; must be sober and reliable. Bodine & Davis, Bellows Falls, Vt. Oct. 12

A man with sufficient experience in the stove business to assume the management of the sales department of a reputable manufacturing establishment; state present employment, character and duration of past experience and general fitness to fill position indicated. Communicate with "Experience, 928," care *The Metal Worker*, New York. Sept. 28

We want to engage a good all round RETINNER; state experience and salary expected. "C. D. J.," care of *The Metal Worker*, Hamilton Building, Pittsburgh, Pa. Oct. 5

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A competent man to take general supervision of the manufacturing departments of a well established stove foundry; state past experience, present employment and qualifications for position. "Foundryman," care *The Metal Worker*, New York. Sept. 28

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On the road to represent some good metal house, tin plate and tinner's supplies; Southern territory; now or January 1; have a good knowledge of the metal business; can furnish any reference desired. H. S. Nance, formerly of Timberlake & Nance, Huntsville, Ala. Oct. 19

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HEATING ENGINEER and SALESMAN wishes to make engagement with a No. 1 firm with a full line of boilers, furnaces and supplies; Wisconsin territory preferred. Box 155, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Oct. 19

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PLUMBER, GAS, STEAM and HOT WATER FITTER; ten years' experience; good reference; steady and sober; would like steady job near city. Box 41, Southampton, Long Island, N. Y. Oct. 19

STEAM, HOT WATER, HOT AIR HEATING APPARATUS SALESMAN and ESTIMATOR; experienced in New York City trade; desires to change position; practical mechanic. "Heating Engineer," 160 Bleeker street, New York. Oct. 19

At once, by a young man as TINNER; good at general job work; temperate, reliable and honest; six years' experience. Box 134, Waterman, Ill. Oct. 19

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By a young man, 17 years, at general job in lead pipe, iron pipe, pumps, roofing, gutters, stove and heater work; sober and steady; tools lost by fire; would like another start at \$7 per week and board; steady work, country preferred; would like to start October 26. J. T. Brooks, 233 W. Fifth street, Cincinnati, Ohio. Oct. 12

Steady position desired as STOVE PATTERNER FITTER; have had 25 years' experience. Tony Schafer, 1815 E. Main street, Richmond, Va. Oct. 12

As BOOKKEEPER for manufacturer, by a young man with ten years' experience in a large office; am a worker, good ledger keeper or collection clerk; know the Canadian trade; splendid testimonial from last employer. "Wallace," care *The Metal Worker*, New York. Oct. 12

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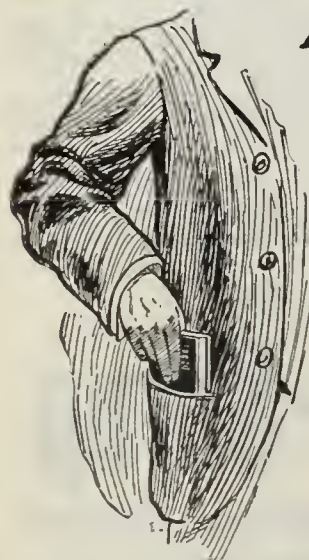
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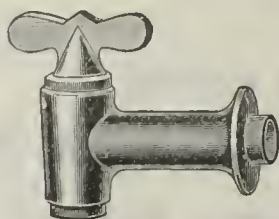


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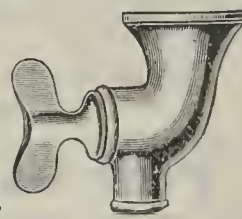
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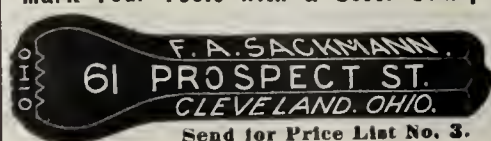
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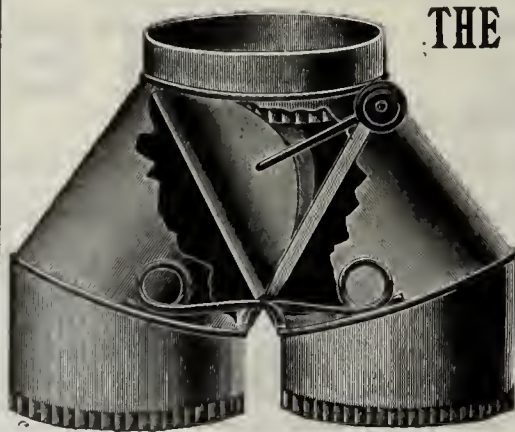
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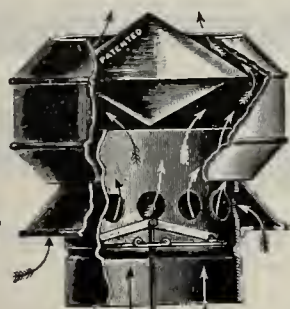
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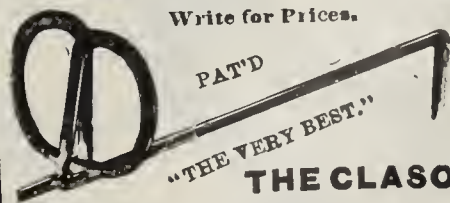
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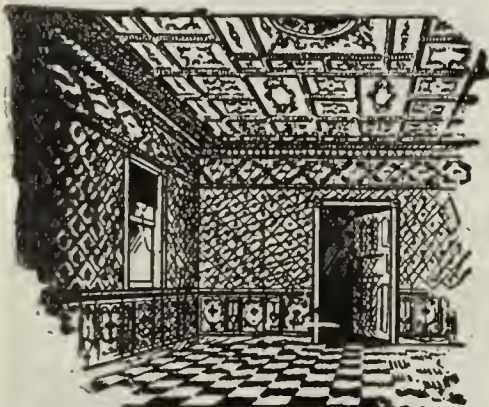
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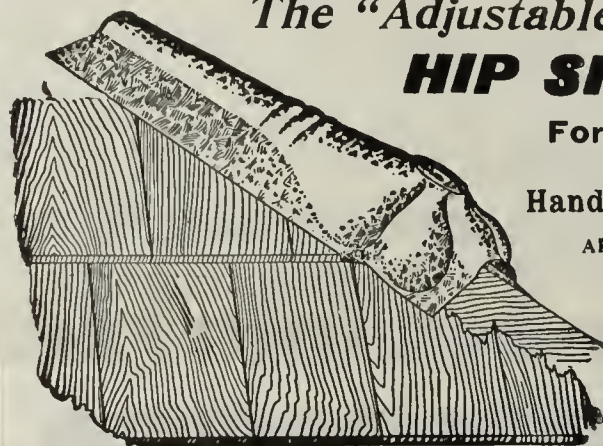
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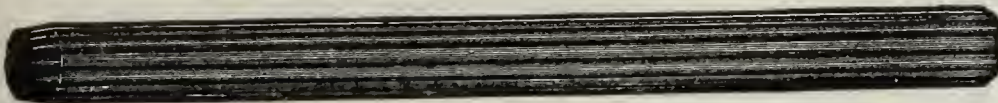
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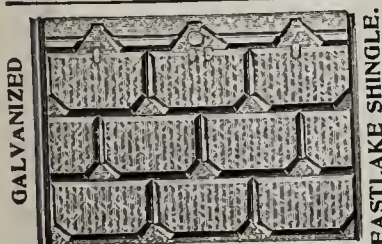
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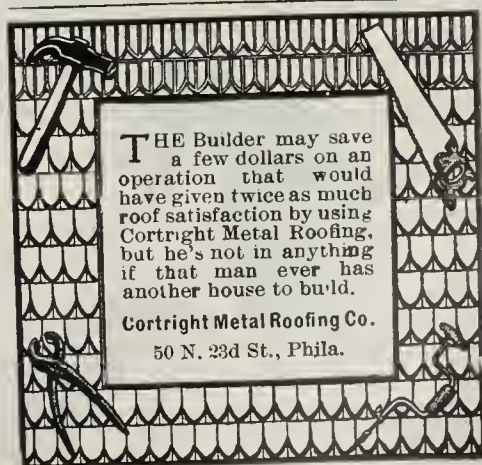
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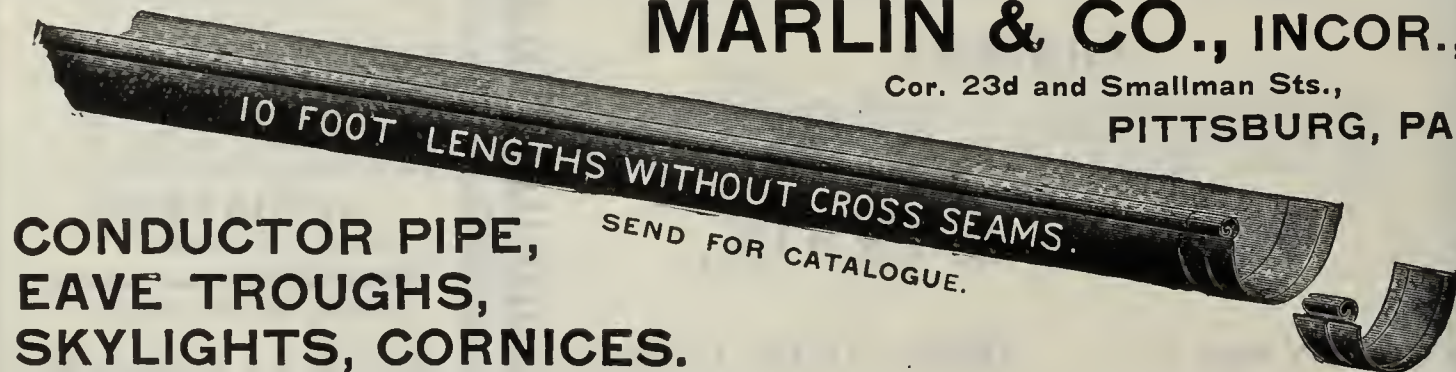
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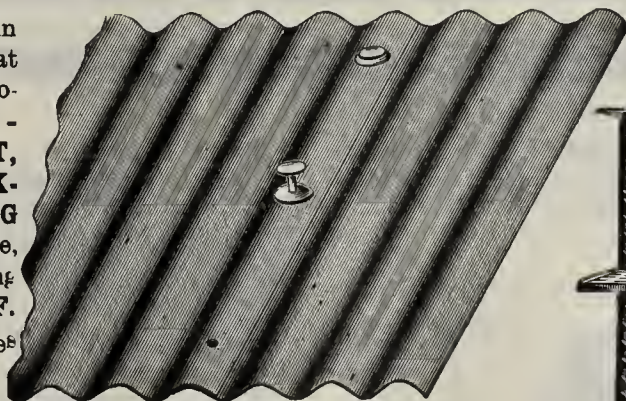
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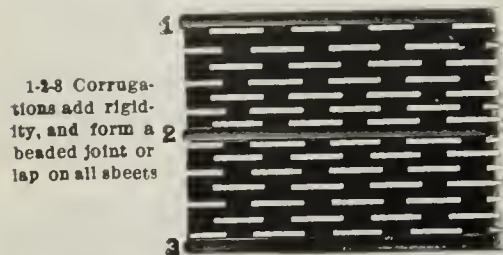
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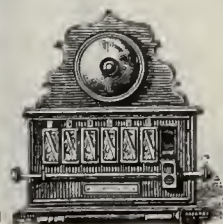
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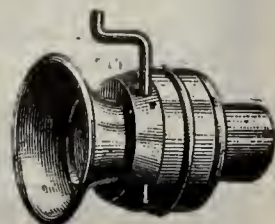
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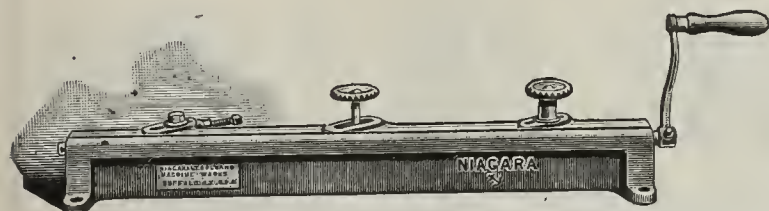
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Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.
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GUTTER BEADERS,

Suitable for Rods of Various Diameters.



NIAGARA ADJUSTABLE GUTTER BEADERS.

These machines possess the advantage of being adjustable for rods of various sizes from $\frac{3}{8}$ to $\frac{1}{4}$ inch diameter. After forming the bead the jaws can be opened quickly to facilitate removing the work and rod. They are better adapted than the ordinary Gutter Beader to different thicknesses of material.

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TOOLS.

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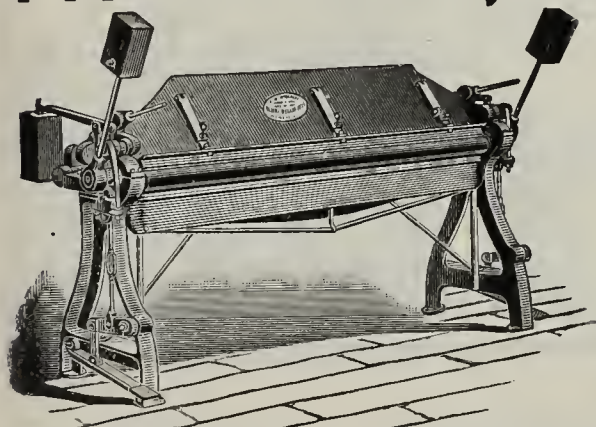
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THE PECK, STOW & WILCOX CO..

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Tinsmiths' Tools
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Highest Grade.



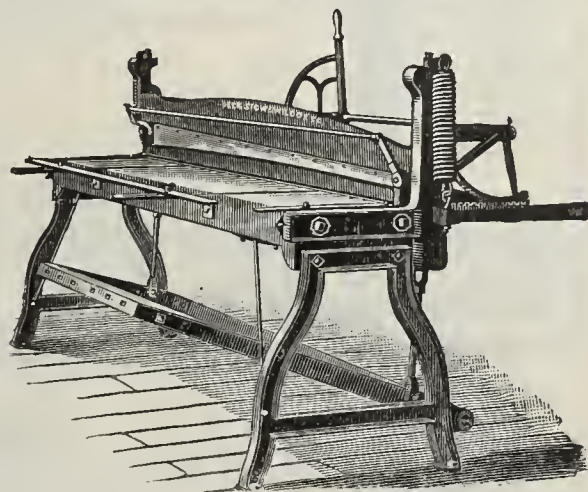
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Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD.

96 inches long.

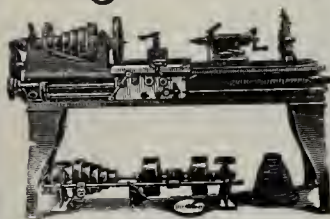
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96 inches long.



CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 22 iron
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Large Stock. Prompt Deliveries.

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TESTING MACHINES and
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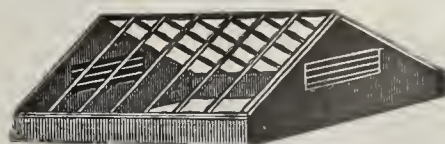
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Absolute Protection from Lightning is given
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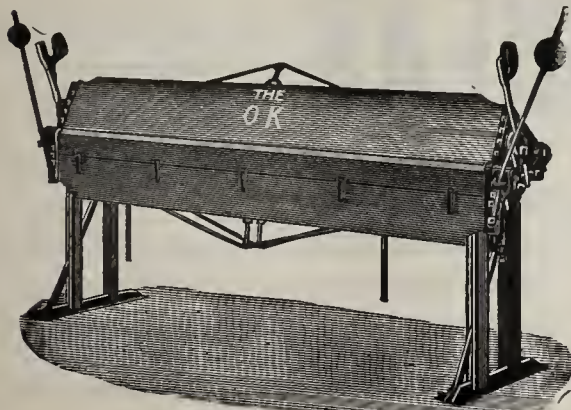


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Metallic Sky-Lights,

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Tin and Iron Roofers.

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Merit always wins—that is why
the O. K. Steel Brake has found
favor among cornice makers and tin-
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There were 300 sold during the
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It does not pay even for a small
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Run your shop up-to-date, work
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Dreis, Andrews & Krump,

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all kinds of Sheet Metals.

A few of the many
articles for which we make
the complete machinery for
producing are shown in the
accompanying cuts.

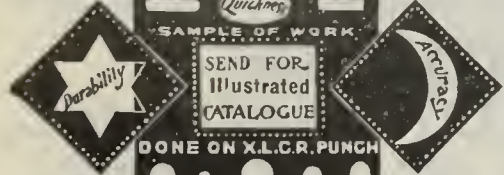
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20th Century Groover
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20th CENTURY GROOVER, Handiest out.
Operated from one position. Automatic knock-
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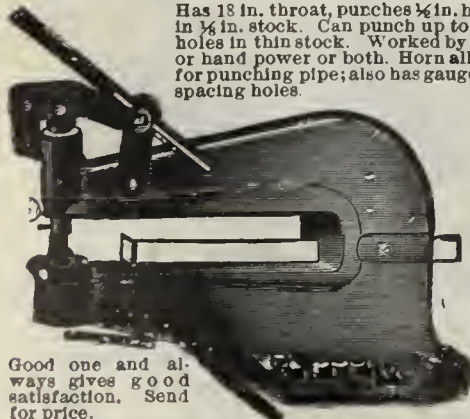
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Has 18 in. throat, punches 1/4 in. holes
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holes in thin stock. Worked by foot
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Manufacturers of all kinds of

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BRACKES (ALL SIZES), HEAVY AND LIGHT SQUARING SHEARS,

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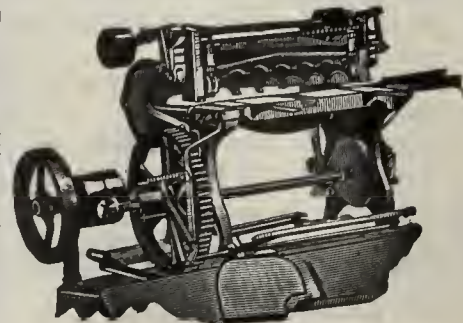
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For Squaring, Trim-
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No. 6 Or Plates and
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Made in Lengths
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The most practical and power-
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improvements. Write for cir-
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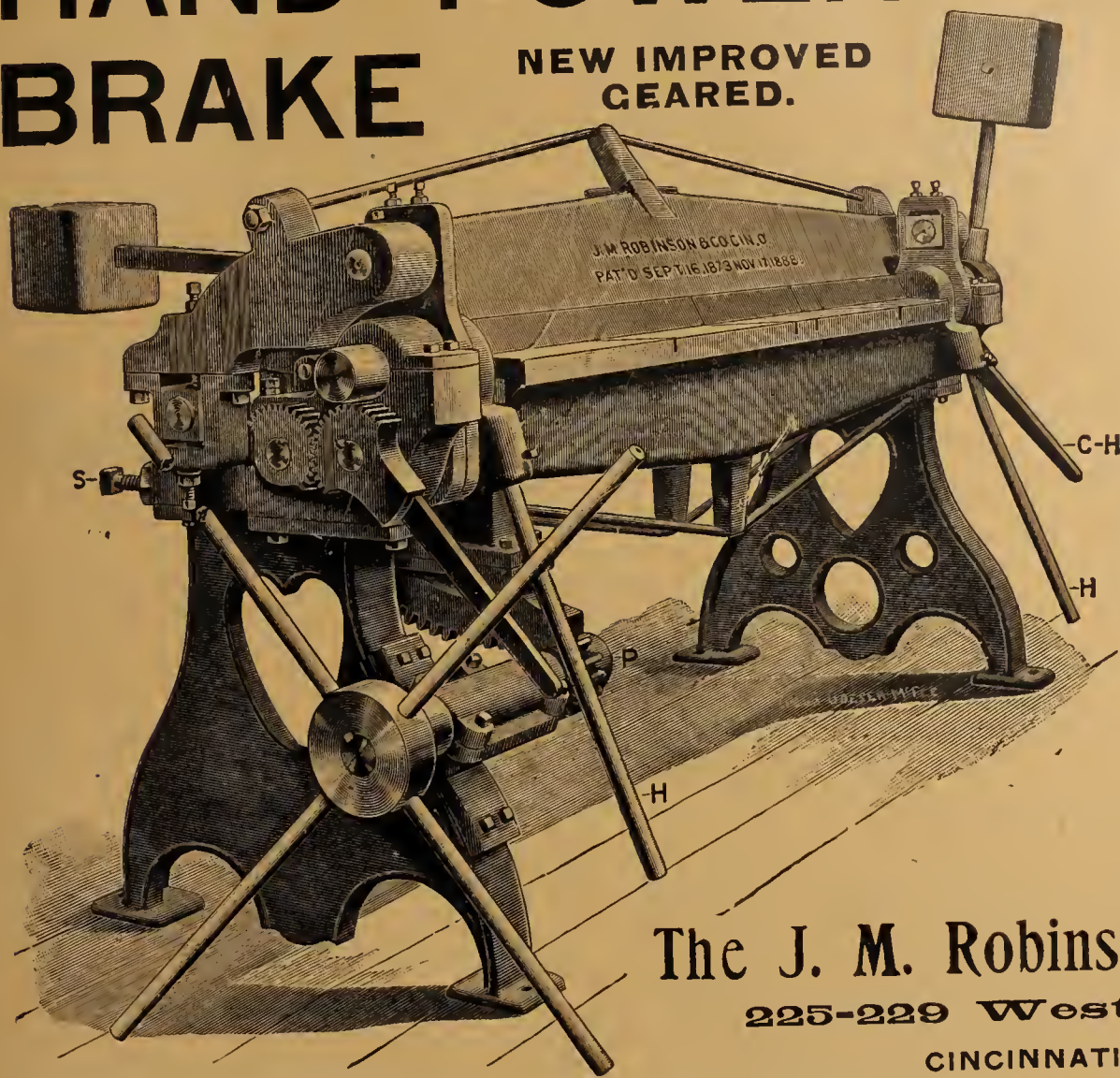
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NEW IMPROVED
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6
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FOOT.

Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

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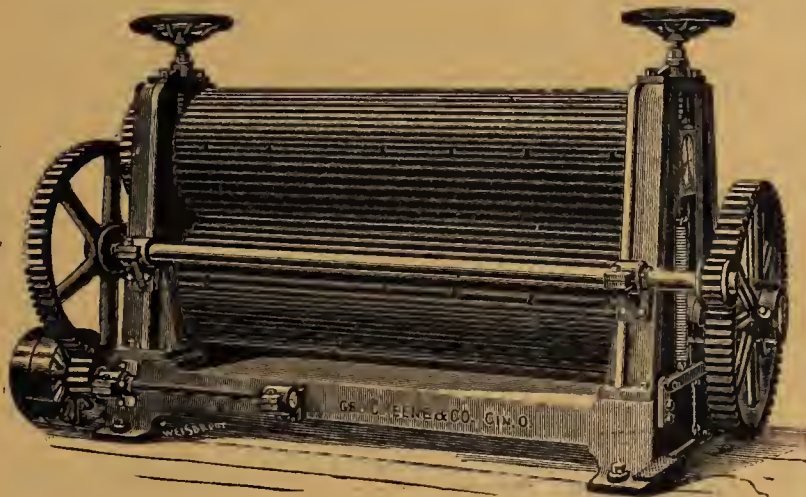
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The equipment of Iron Roofing Establishments, a specialty.

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Buy the Guaranteed Grades. STRICTLY NEW METAL.

"HUNGERFORD'S BEST," "ANVIL BRAND,"
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Each Brand ALWAYS THE SAME. Packed in 250 lb. Cases. Large Stock
Always on hand. Shipments Made Same Day Order Reaches Us.

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Patent Automatic Can Body
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New Model Grand

is one of the bright thoughts of the New Century. But little attention has heretofore been paid to this attachment in modern Range Construction. By a simple locking device the Model Grand Oven Rack, when pulled out to its full width, remains rigidly in position, affording opportunity for turning around the roast or the loaf without reaching into the hot oven. Then it can be pushed back into position. It is removable as readily as the ordinary rack. It is aluminum plated, so that it can be easily cleaned.

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We Solicit Your Orders

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Prompt Shipment

FOR ALL KINDS OF TIN PLATES.

N. & G. TAYLOR CO.,

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TIN AND TERNE PLATES,

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Lighted by Frink Reflectors.

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American R. G., cleaned, of uniform black color.

Dealers in all kinds of Iron and Steel Scrap.

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"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.

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Oven Capacity

is one of the principal requirements in a modern range. This is increased 50 per cent. in the

MODEL HUB

With Steel Oven,

by baking on oven bottom and oven rack at same time.

NO CHANGING OF FOOD NECESSARY.

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Don't Sell Cheap

goods, just because they are cheap. One thousand dollars in Glenwood sales brings more future business, more clean profits, more real satisfaction than five times the amount done in shoddy. Sell

GLENWOODS.

Weir Stove Company,
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HEATER PIPE TIN!

We can make prompt shipment of the following sizes :

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ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

Vol. LVI.
 Number 17.

NEW YORK AND CHICAGO, OCTOBER 26, 1901.

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 SINGLE COPIES 5 CENTS.

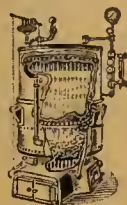
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Fire Brick Stove Linings

HIGH GRADE. LOW PRICE.

Also **Plastic Iron Stone Stove Lining**

In Bags or Barrels. Send for Prices.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

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While hard coal is mostly used in the Paragon Furnace, we make it to burn soft coal as well, and pea coal or coke can be burned in any size and any style. The Paragon line is also adapted to low cellars, and we have a form of it for bricksetting. We also make a combination Paragon with either steel or cast iron radiators.

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 It sells in half the time it takes to sell others.
 Therefore, you sell more.

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PRINCIPLE Price, \$1.00
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GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark. JENKINS BROS., New York, Boston, Chicago, Philadelphia.

FOLLANSBEE BROTHERS CO.,
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 Galvanized and Black Sheets.

The best made
 Sheet Copper
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 at lowest mill prices.
 Manufacturers
 Roofing Tin Plates.

Philadelphia Branch,
 133 Arch Street,
 S. V. Reeves, Manager.

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Why is common galvanized iron common?
 Because common men pay \$2 for wages as freely as \$1 for stock.

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Steam Specialties.

RELIEF and NOISELESS BACK
 ELEVATOR VALVES, PRESSURE VALVES,
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CURTIS GANDY CHICAGO 1900



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the ambition**

to plan
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furnace work
from start
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our *Round Oak*
methods will
show you
just how to
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have given him
the worth
of every dollar
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drop us a line.

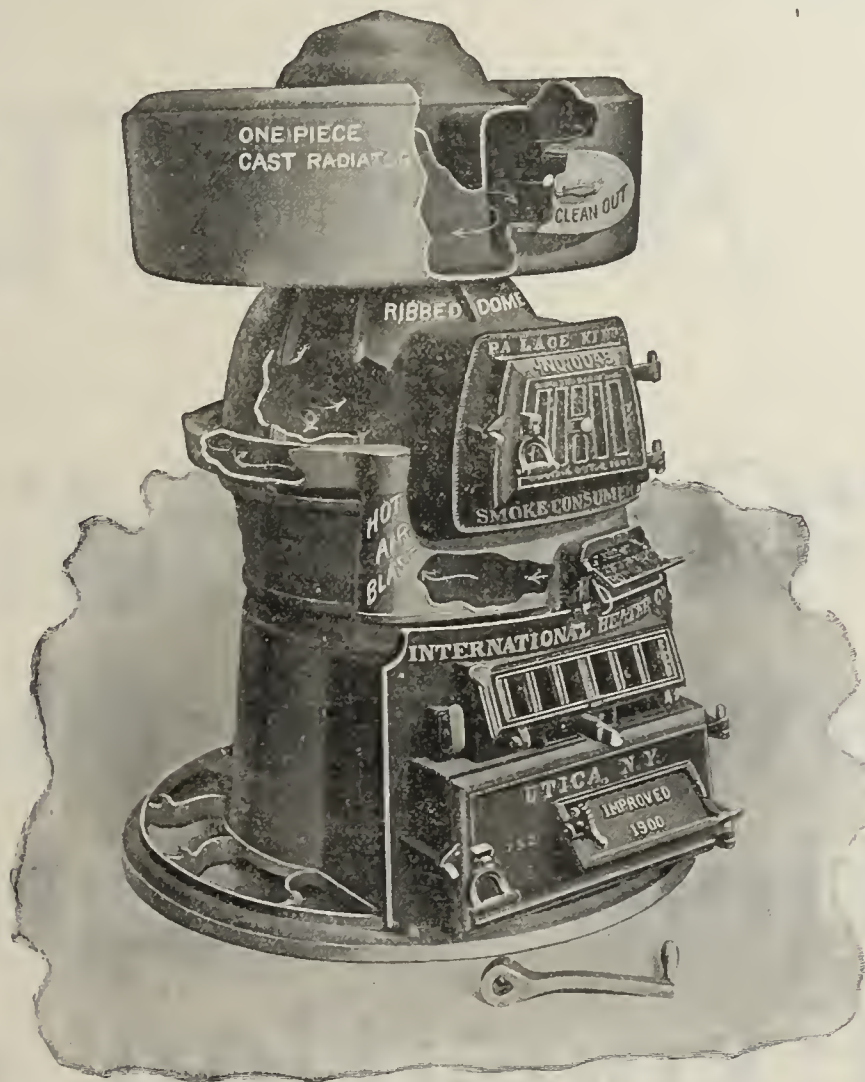
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If you are going out of business next year and value not the good will of your neighbors, sell "paste board" heaters, otherwise handle good goods.

NEW PALACE KING Hot Blast

Smoke Consumer
WARM AIR FURNACE.



FOR SOFT COAL.

All Cast Iron. Strictly High Grade.
Very Durable.

The Hot Air Blast Appliance

Is so formed that the distribution of the hot air to the combustion chamber is equally divided at three points:—at the back and on each side. This appliance embodies the important advantage of a hot air blast and also the very vital point of a durable construction. This question of durability of a hot blast appliance for soft coal fuel is one that has caused much annoyance and expense, and in this construction we have carefully provided for this important point. It is not a part of the combustion dome or fire pot, insuring equal expansion and contraction. The air is discharged into the combustion chamber directly over the surface of the fire and at a very high temperature, yet the construction is such that the combustion does not come in direct contact with it; the parts are allowed to expand and contract equally.

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LARGEST MAKERS OF HEATERS IN THE WORLD.



First Prize Paris, 1900.



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“Garland” Stove awarded First Prize Gold Medal at the Exposition of 1900

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Largest makers of Stoves

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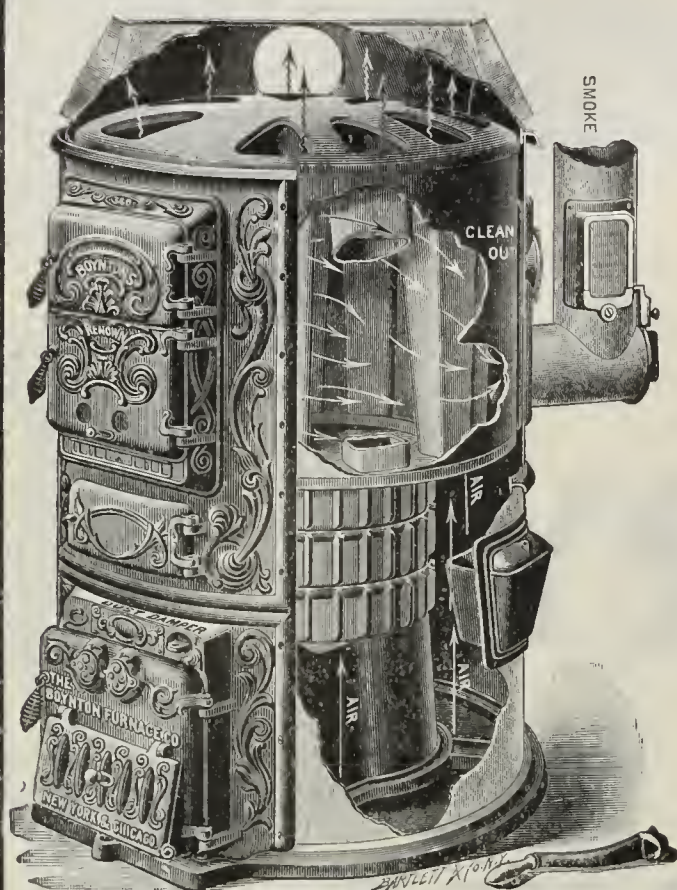
and Ranges in the World.

GO. BUFFALO.



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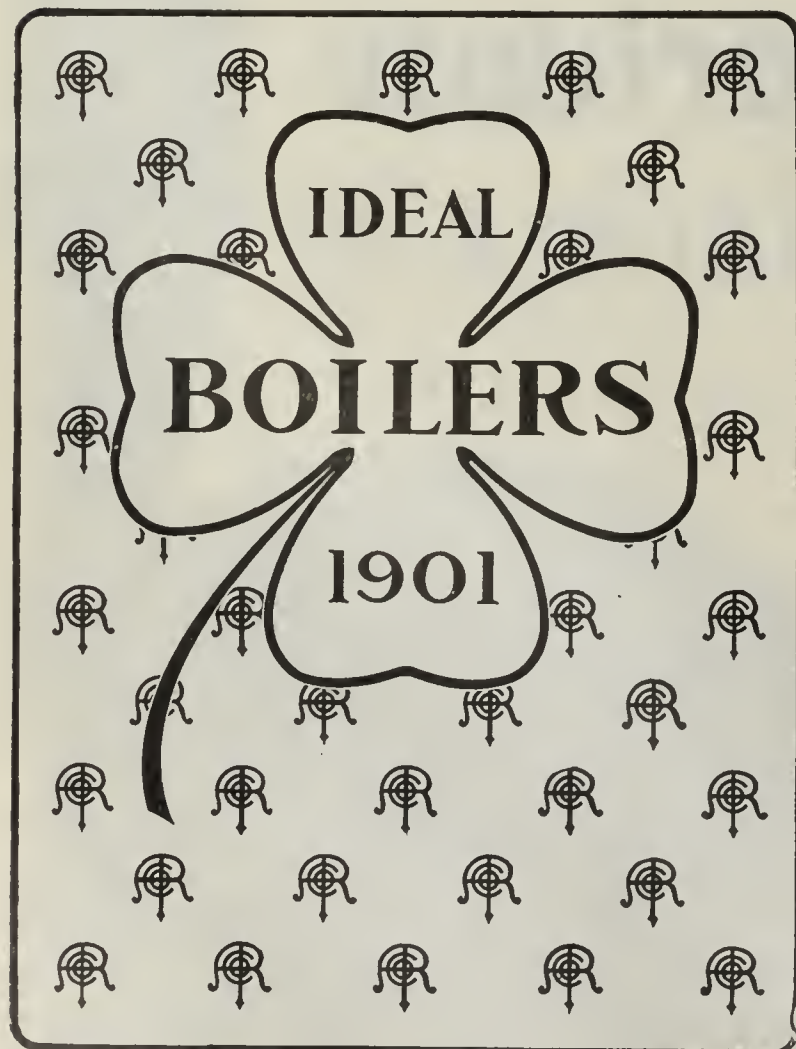
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Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

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A postal card request
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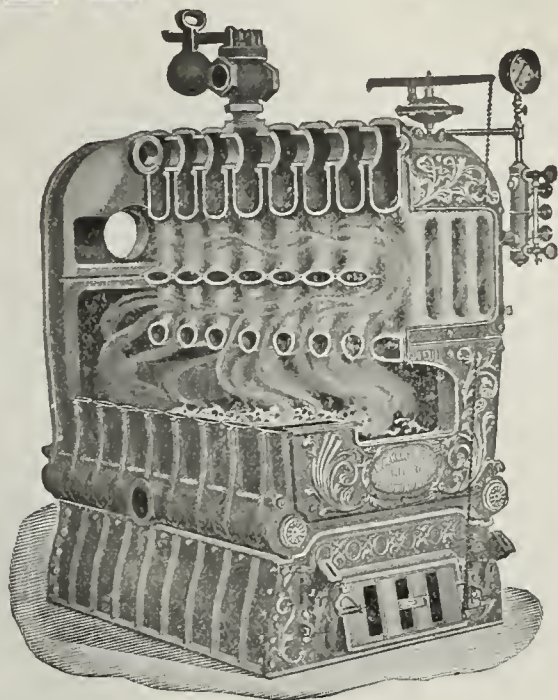
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for Steam: for Water

This boiler is especially designed to suit particular people. It isn't an ordinary boiler. The firebox is deep and roomy; will hold fire for ten or twelve hours without attention. This pleases people who don't like to get up in the middle of the night to shovel coal.

We believe in selling boilers by "honest measure;" for a 1000-foot job you buy our 1000-foot boiler; you pay for a 1000-foot boiler, and our 1000-foot boiler is plenty large enough to do the work, and a margin to spare.

Prompt delivery of catalogues or boilers.



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Makers Also of
CRAWFORD
RANGES.

Finest Factory in this Line in the World.

"Norman" Steel Range.

BUILT LIKE A WATCH.



ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

DO you want to buy a good Number One, Medium Priced Range that will Roast and Bake with the best of them? If you do then do not be persuaded to buy anything but a



GEM-MILLER

STEEL-PLATE

RANGE

Which are far superior to other so-called first-class Ranges as to Roasting, Baking and Durability that are made.

WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickeled instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

Special attention is called to the easy manner of Removing and Replacing the Grates and Grate Frames in these Ranges without interfering with the Water Backs or Linings. Simply by taking out the small bolt and removing the Front Grate the entire Bottom Grate and Frame can be drawn out through the Front Draft Door.

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Write for Prices.

Nos. 125 and 127 E. Fifth Street,
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STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.
We would be pleased to send our catalogue.



PITTSBURGH STOVE & RANGE CO.,

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ENTIRELY NEW.

HIGHLAND OAK

DOUBLE HEATER AND CIRCULATOR.

Full Revertible Flue.

A Stove without a Competitor.
For Any Kind of Fuel.

ECONOMICAL

.....EFFICIENT

Fifty per cent. more heat from a given amount of fuel than
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EFFECTIVE DUST FLUE AND DAMPER.

FIRE POT HEAVY AND DURABLE.

CONVENIENT CLEAN OUT IN ASH PIT.

WITH OR WITHOUT MAGAZINE.

PLAIN OR DUPLEX GRATE.

HIGHLAND OAKS are constructed in the most modern
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others in important features, both as to structure and external appearance.

[APPLY] FOR THE HIGHLAND OAK AGENCY AT ONCE AND THEREBY
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WRITE [US FOR] CATALOGUE AND FULL PARTICULARS.

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Model Steel Range



For Hard Coal, Soft Coal or Wood.

They are **Models** of all the good things, useful and beautiful, that can be embodied in a modern range. Their popularity, on account of their many good points, has led many imitators to copy them as near as they dare, but as the oven doors, dampers, fire-box and other features are covered by patents, the imitations are still behind in the race, so far as construction and operation are concerned, and we feel confident that a comparison will result in a most favorable impression as to our claim that they are **Models of Beauty** and just the one range above all others that it will pay the dealer to handle. The large and constantly growing trade we enjoy on the **Model Steel Range** has been built up purely on its merits and not through a lot of extravagant "fake" advertising.

Write for prices and discounts.

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FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, **Durable, Economical** and **Attractive** gas heating stoves on earth.

The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market

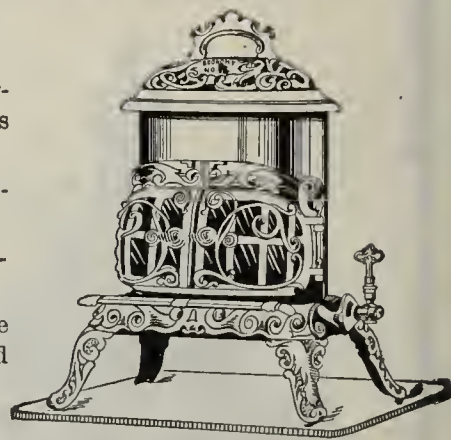
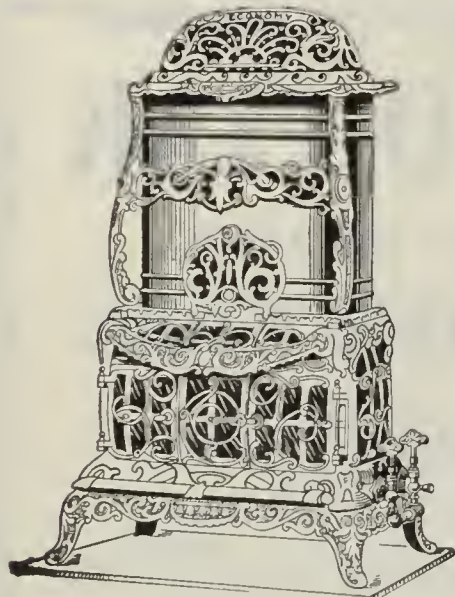
Absolutely free from odor or condensation.

By securing the agency for the **Economy**, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

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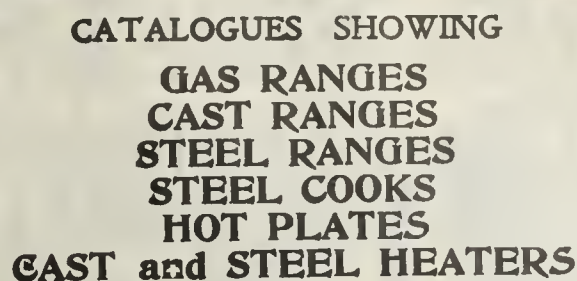
Apply All The Tests

to **Schill's Furnaces and Ranges**, and they will fill the bill every time. Whether the test be durability or economy of fuel, satisfaction to the user or salability. They never fail to meet every requirement.

Write for Catalogue and Prices.

THE SCHILL BROS. CO.,
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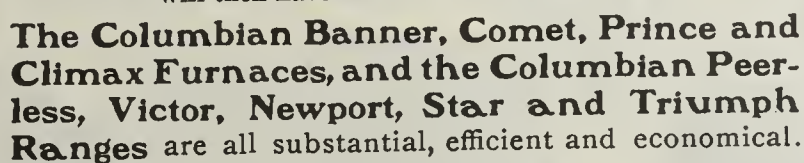




WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

Should secure our Line of Goods. They will then have the Best on the Market.



ALL KINDS OF WOOD AND COAL

**Airtights, Base Burners, Globe and Cylinder
Stoves, Gasolene and Oil Stoves.**

Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.

COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



Steel Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse **Artistic Enameled Steel Ranges** with the ordinary black baked Japan used on other ranges.

The "ARTISTIC" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical ; the best steel range.

SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

GAS STOVES & BURNERS.

**HADLER
CO.
PITTSBURGH
PA.**



WRITE FOR CATALOGUE NO 34

THE MOST COMPLETE LINE FOR ALL GASES

JEWEL STOVES AND RANGES..



**A Complete, Well Advertised Line:
Low Prices and Good Workmanship.**

Please Write for Catalogue.

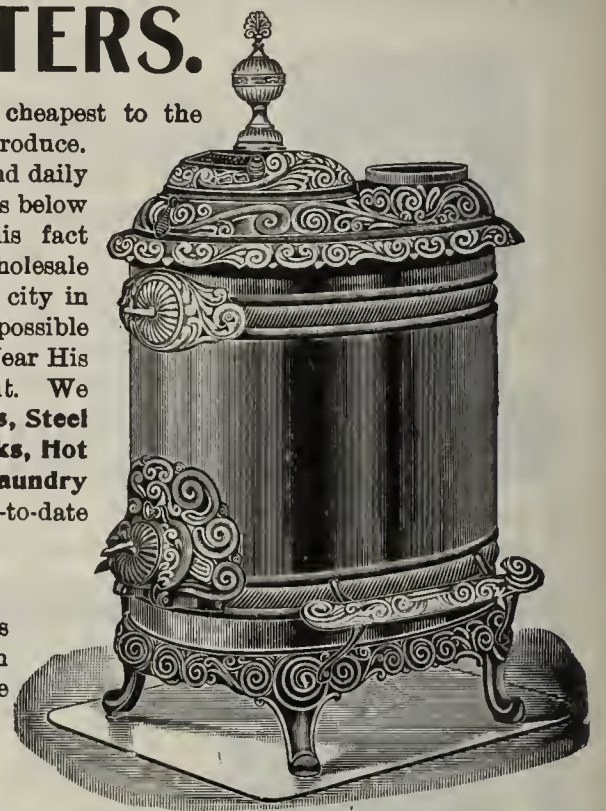
DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.



Cook Stoves,
Air Tight
Wood Stoves,
Oak Stoves,
Heating Stoves,
Fire Place
Heaters,
Furnaces.



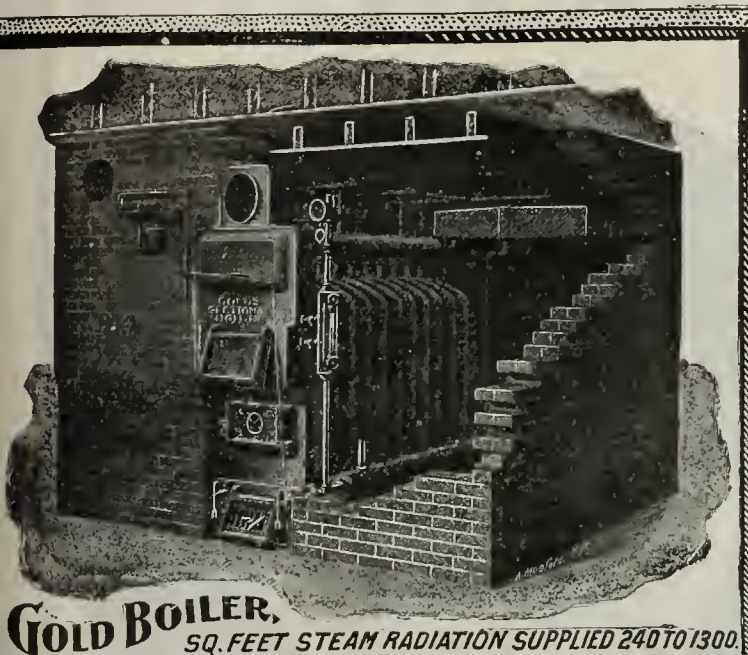
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The B. C. Bibb Stove Co., Baltimore, Md.

BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

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MILWAUKEE, WIS.



GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

THE H.B. SMITH CO.

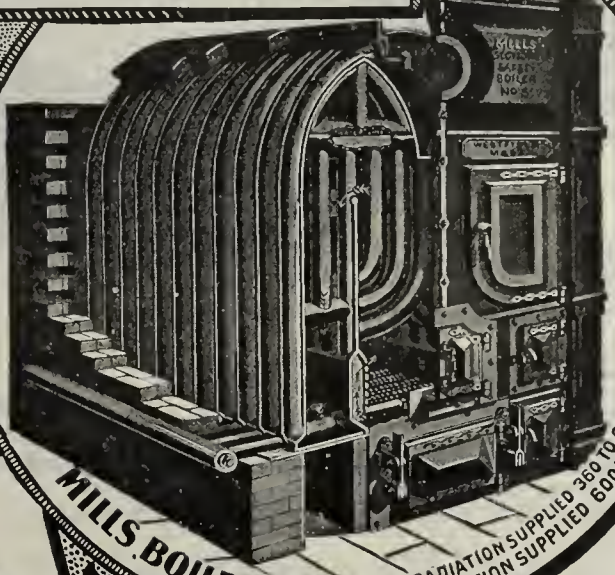
**WESTFIELD,
MASS.**

**EUROPEAN
AGENT,
AUG. EGGERS**
BREMEN AND
NEW YORK
CITY.



COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.

**PACIFIC
COAST
AGENTS,
DUGAN BROS.**
SAN FRANCISCO
CAL.



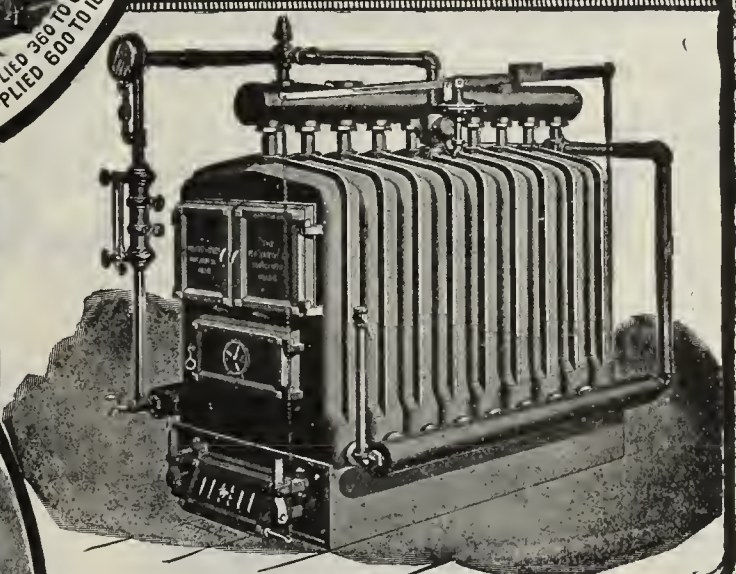
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SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



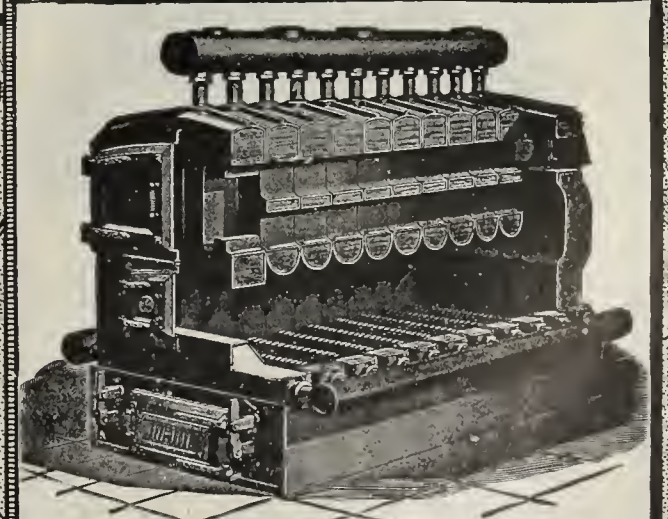
MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

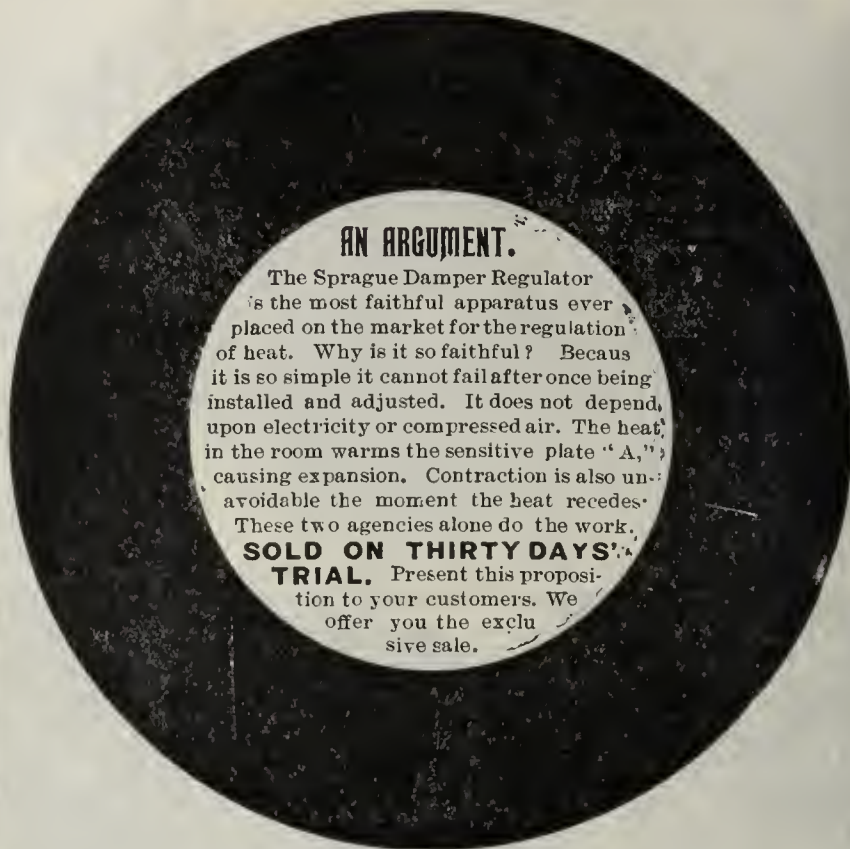
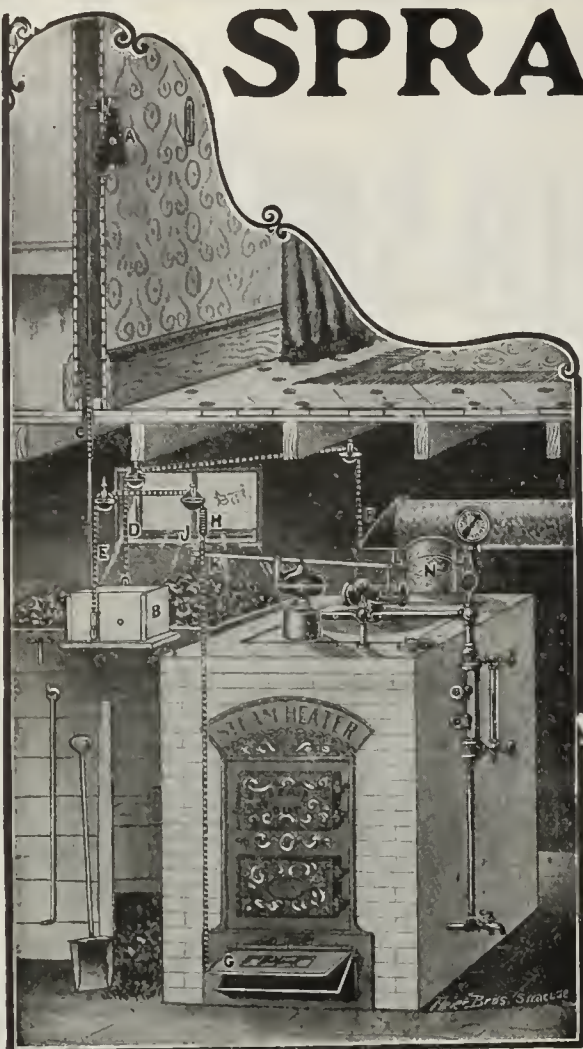
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WESTERN BRASS MFG CO.
ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

SPRAGUE Damper and Valve Regulator.



Not An Argument With A Hole In It.

Made by HOWARD THERMOSTAT CO., Oswego, N. Y.

Furnace and Kettle

FOR

BUTCHERS' USE.

UNEXCELLED.

MADE IN SEVEN SIZES.



Furnace: Modern construction so that drafts are applied directly against the kettle, securing the greatest results from the least amount of fuel.

INTERIOR OF KETTLE PERFECTLY SMOOTH and CIRCULAR.

GIBLIN & CO., Utica, N. Y.

Prices and Discounts Quoted on Application.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick

in radiator will wear for years. Our improvements for 1901 give us a perfect heater.

Triplex Grate.

PERFECT SHAKING.

PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces, for Hard or Soft Coal,

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901

Deeper Ash Pit

Solid Front Shield

Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

*Modern Construction and Durable
Of Great Capacity*

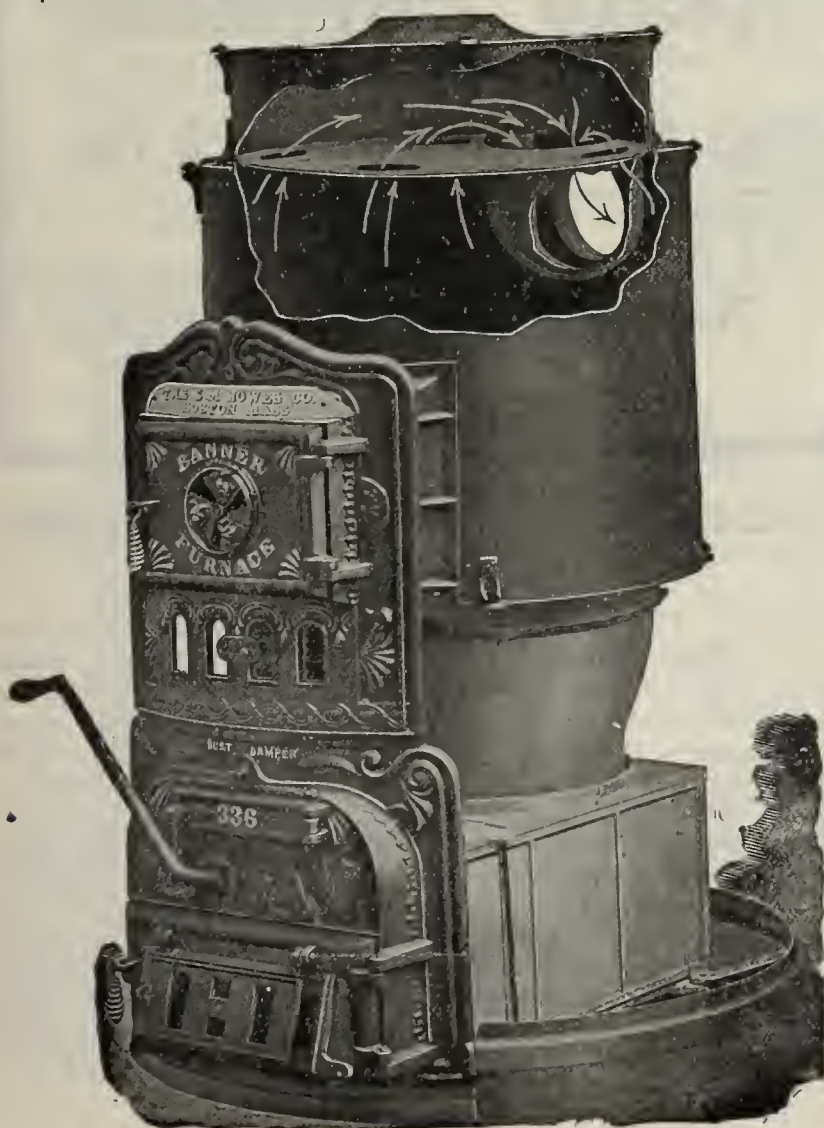
Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

THE S. M. HOWES COMPANY

40, 42, 44, 46, Union Street
BOSTON, MASS.



Royal Heaters.

MANUFACTURED BY THE
HART & CROUSE CO.
UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
FOR HEATING ALL CLASSES OF BUILDING.

285 WATER ST., N.Y.
COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO.
ST. LOUIS.



Emperor Furnaces FOR WOOD.

Simple, Safe, Durable.

Economical in Flue.

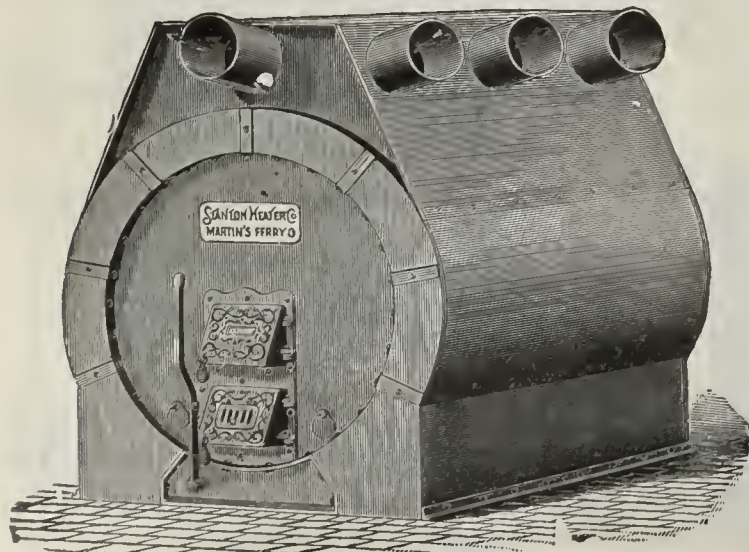
The Best and Cheapest Line of Wood Furnaces.
Furnished for either Brick or Galvanized Iron Casing.

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Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater, PORTABLE CASING.



The cut herewith represents the *Stanton Seamless Heater complete*, with portable casing. The inside Casing Sheet is made of No. 24 cold rolled sheet steel. The outside casing is made of No. 24 Aluminum-coated sheet steel, which is anti-rust and will stand a much higher degree of heat than it will ever be subjected to before tarnishing. Heavy asbestos paper is placed between inside and outside casing, which prevents heat from radiating into cellar. *This coating will not peel off*, but remain pretty and white.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

MARTIN'S FERRY, OHIO.

SEE OUR ADVERTISEMENT NEXT WEEK.

Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

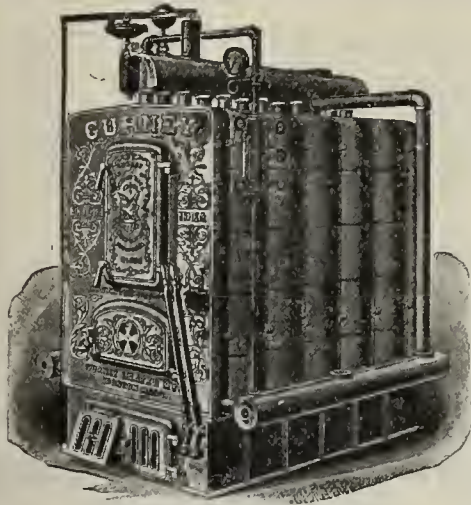
GURNEY

"Bright Idea" Heater

thinks of it: "My house is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.



Bright Idea Steam Boiler.

GURNEY HEATER MFG. CO.,

74 Franklin St., BOSTON, MASS.

111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

BENGAL FURNACES

Have No Competitors in Their Line.

ALL CAST IRON.

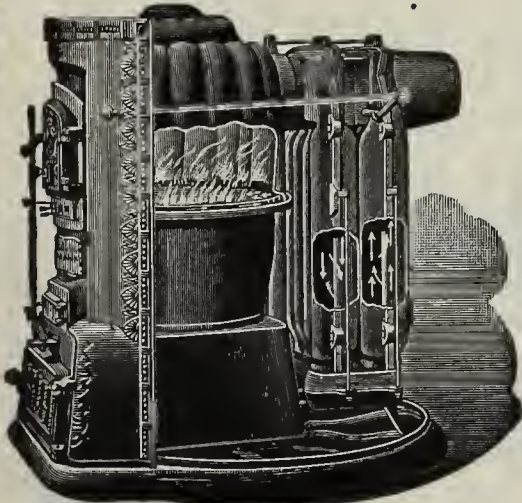
More Radiating Surface Than Any Other Furnace Their Size.

Bengals burn perfectly anthracite or bituminous coal or coke and

HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.



Eastern Selling Agents,

GURNEY & CO.,

Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,

ROYERSFORD, PA.

Gilt Edge Warm Air

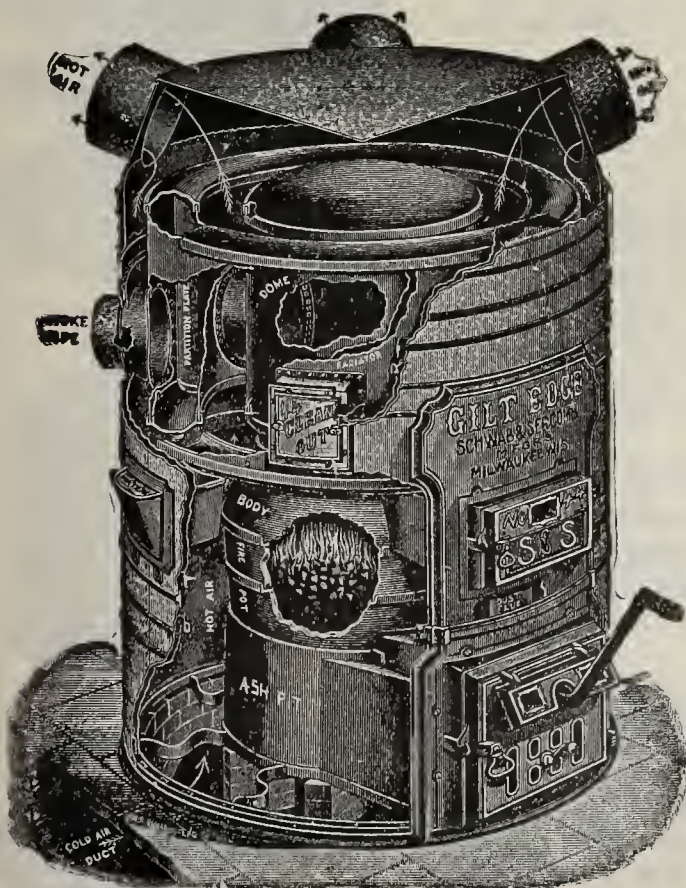
AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.



S U P E R I O R F U R N A C E S

U T I C A H E A T E R S

T H E Y
S T A N D
U P !

DURABILITY.

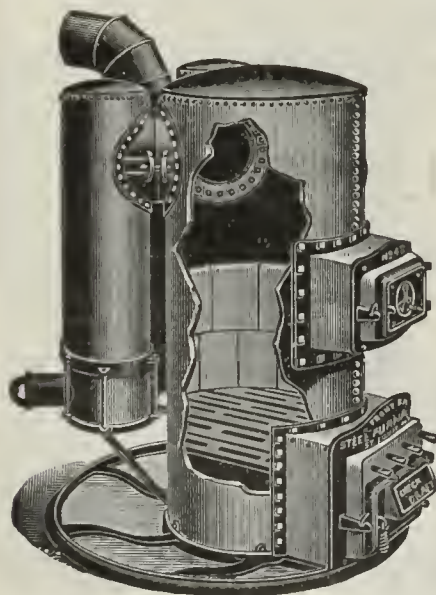
SUPERIOR Furnaces and UTICA Heaters, with ordinary care, will outlive any other furnaces. If you knew how much care we exercise in maintaining the wonderful iron mixture and the high quality of the steel sheets that enter into the construction of SUPERIOR Furnaces and UTICA Heaters, you would not wonder why this line is popularly regarded as "The Best!"

Where other furnaces are weakest, SUPERIOR Furnaces and UTICA Heaters are strongest.

Send for Catalogue and Quotations.

UTICA HEATER COMPANY, Manufacturers,
UTICA, N.Y.

CHICAGO HEATER & SUPPLY CO, Western Managers,
54 Dearborn Street, CHICAGO, ILL.



Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

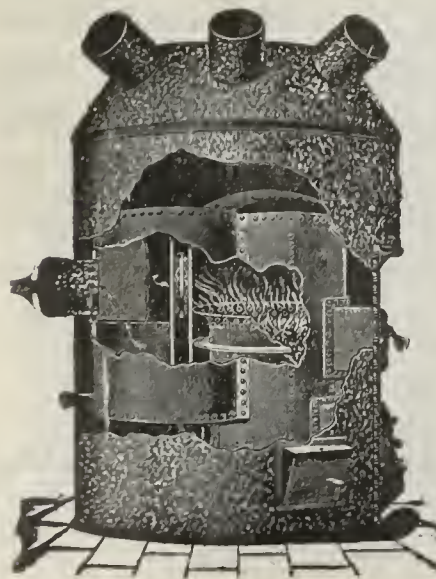
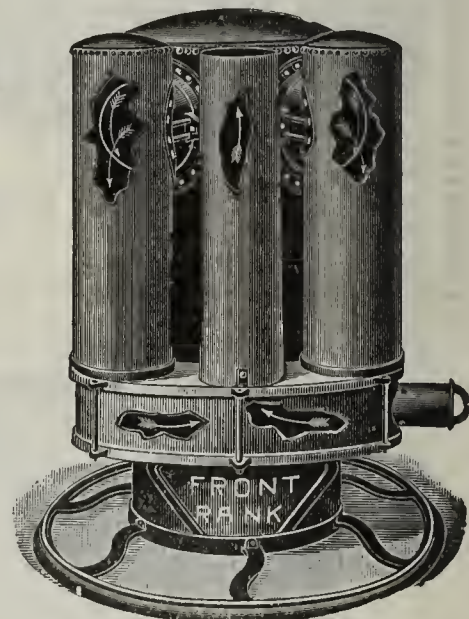
The *Front Rank Fire Chamber* is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

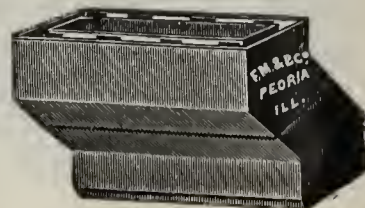
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

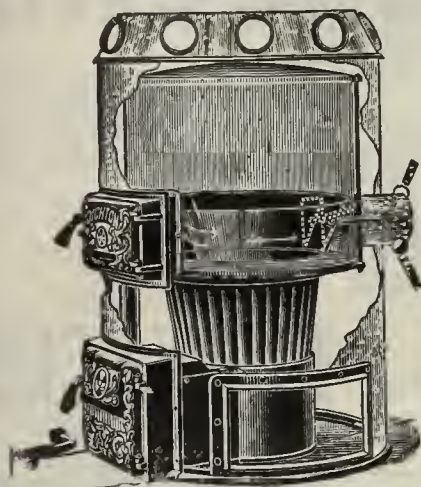
F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



WHEN you pay and your customer pays through you for some other Furnace twice the price we charge for the "DIGHTON," you are paying for theory, sentiment or imaginary value—paying for something that is of no real practical worth to you or to your customer.



The results secured do not begin to be in proportion to the expenditure—you have paid out more money than was actually necessary—you haven't got anything to show for the extra money you paid after five, ten or fifteen years—you haven't heated your house any more evenly or used any less fuel—you haven't obtained any better results in any way; probably not as good as your neighbor who has used a "DIGHTON." The chances are, your expenditure for repairs in fifteen years would be double what you would have paid out on a "DIGHTON."

DIGHTON FURNACE CO., Taunton, Mass.

A Profitable Business

IS THE RESULT OF HANDLING SOMETHING GOOD.



DOUBLE RADIATOR. ALL CAST IRON.

"MUELLER" Furnaces and Boilers

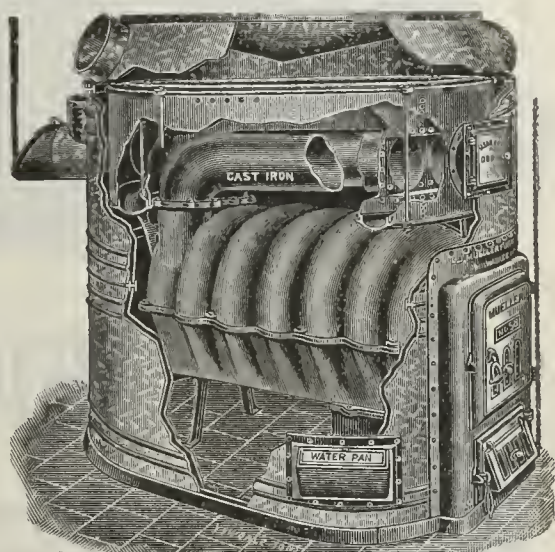
Have Accomplished this result for our customers.

Heaters of all Sizes and for all kinds of Fuel.

Write for Catalogue and Prices.

EVERYTHING IN THE HEATING LINE.

Established 1857.



DOUBLE RETURN FLUE STEEL PLATE RADIATOR.
FOR LONG WOOD.

190 Reed St., **L. J. MUELLER FURNACE CO.,** MILWAUKEE, WIS.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

FIVE HUNDRED DEALERS



in the United States have sold **RIVAL** furnaces for the past fifteen years and are selling them now. They have allowed other dealers to put in the **CHEAP WORK** and have given their customers

RELIABLE

FURNACES

wisely installed and thoroughly efficient in operation. Where **RIVAL** furnaces have been sold the general tone of a furnace business has been advanced to a higher level. Where they have not been sold the furnace business has been in disrepute. Dealers that have had an unsatisfactory business during the past year, have had

MUCH TROUBLE and LITTLE PROFIT

should consider that possibly it is owing to the character of the heaters they sell. We want good dealers to sell our furnaces, install them in a good manner, and good satisfaction will result with increased business at good profit. Our catalog illustrates and describes the line of heaters we make and on application we will quote right prices.

GIBLIN & CO.,
UTICA, N. Y.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.



HEATER.

WE WANT YOUR HEAD FOR A MOMENT

To put into it several reasons why you should use

SAFETY FURNACE PIPE.

THE PRICE IS RIGHT.

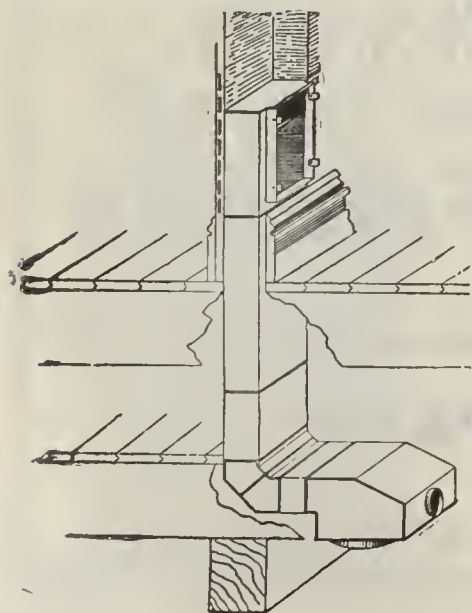
MATERIAL IS RIGHT.

WORKMANSHIP IS RIGHT.

And the Best Design and Joint on the Market.

We have many more reasons, and good ones too, contained in our catalogue, which we shall be glad to mail you on request.

SAFETY FURNACE PIPE CO., No. 11 and 13 East River St., Detroit, Mich.



Furnaces

Magee

Furnaces

HARD OR SOFT COAL OR COKE.

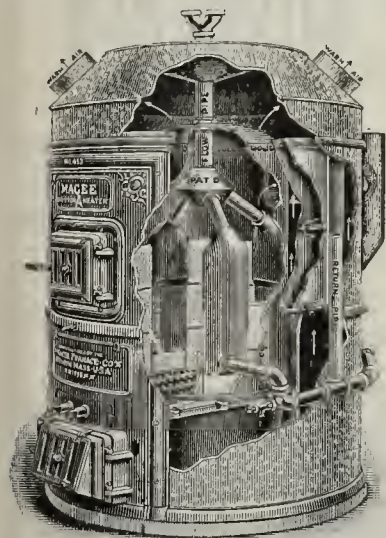
WROUGHT OR CAST IRON.

ALL SIZES.

RESIDENCES, STORES,
CHURCHES, SCHOOL HOUSES, etc.WARM AIR.
COMBINATION
WARM AIR
AND
HOT WATER.

50 Years of Heater Success back of that name.

Does it mean anything to you?



Magee Boston Heater,

"A" SERIES,

is for Warm Air Heating or for Warm Air-Hot Water Combination Heating. Thorough construction; hand puddled wrought iron used; gas tight; dust tight; sectional cast-pot or brick-lined; linings that last a lifetime; famous "dock-ash" grate; no shaking or sifting; no dead fire around edges of fire-pot; heats greatest amount of space with given amount of fuel; uniform, steady fire; easy to manage; and lots more advantages.

Six Sizes—three sizes for brick-setting.

The Best Test

of a furnace with reference to its heating power is the amount of space it will heat with a given amount of fuel under a proper state of combustion. We make the distinct claim for our

Magee Mystic Hot Blast Furnace

of superiority in this respect over any and all **cast iron** furnaces now on the market. **They're built to wear**, Six sizes. Return Flue Radiators, Either Solid Cast or Wrought Iron.

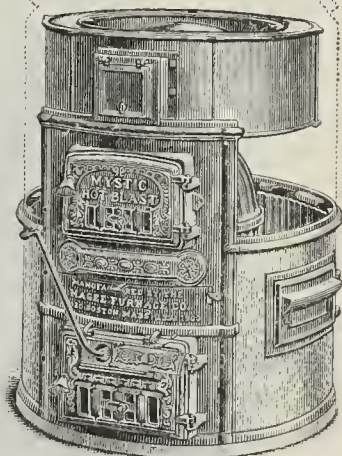
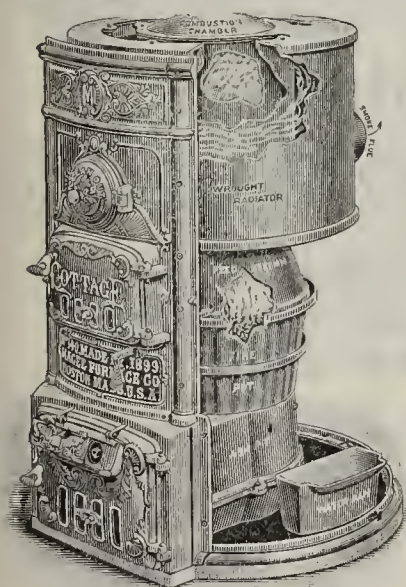
If It's a Question of Price,

or when a low-priced heater is wanted, specify, then, the

Magee Cottage Furnace

It isn't our **best** furnace, but it's a **good** furnace. It meets a wide range of requirements, but it doesn't perform miracles. We don't think there's as good a heater at as low a price. We wouldn't make one for less and you couldn't afford to handle it if we did.

Six sizes. Solid Cast or Wrought Iron Return Flue Radiators. High or Low Shield. Specially adapted to low cellars



Those matters which most vitally affect their operation, which make for success or failure, are ably treated in our catalogue,

SEND FOR ONE.

MAGEE FURNACE COMPANY, 32-38 Union St., Boston.

Steam and Hot Water Heaters, Warm Air Furnaces, Combination Warm Air and Hot Water, Ranges, Stoves. **Largest Line Under One Name in the United States.**



**HOT WATER
AND
HOT AIR**

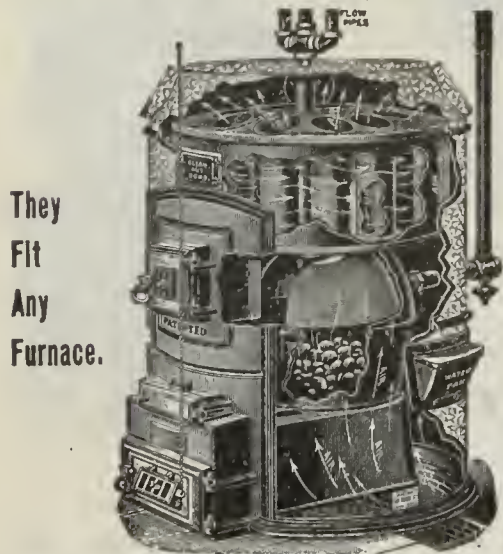
HEATING BY COMBINATION STOVES
AND FURNACES.

Suitable for Large or Small
Houses, Stores, Conserva-
tories, Barber Shops, Ho-
tels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

**THE NATIONAL
PIPE BENDING CO**
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

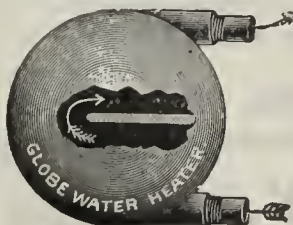


Showing one method of application.

These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity. Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

GLOBE WATER HEATER

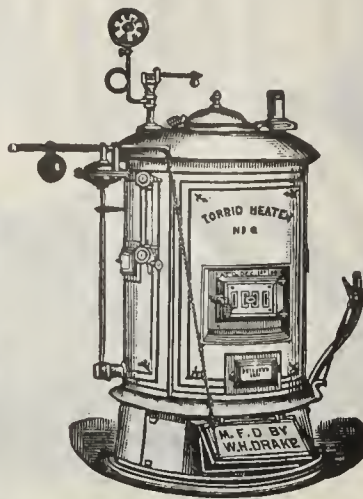
Attached to any
Furnace will
heat water for
domestic use.



Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St. - - - Chicago, Ill.

"TORRID HEATER." *It is Practical in Design.*
FOR STEAM OR HOT WATER. *It is Safe, Being Tested to 200 Pounds.*
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.



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MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St.,
NEWARK, N. J.

Factory: Hackettstown, N. J.



**MONARCH
FURNACES.**

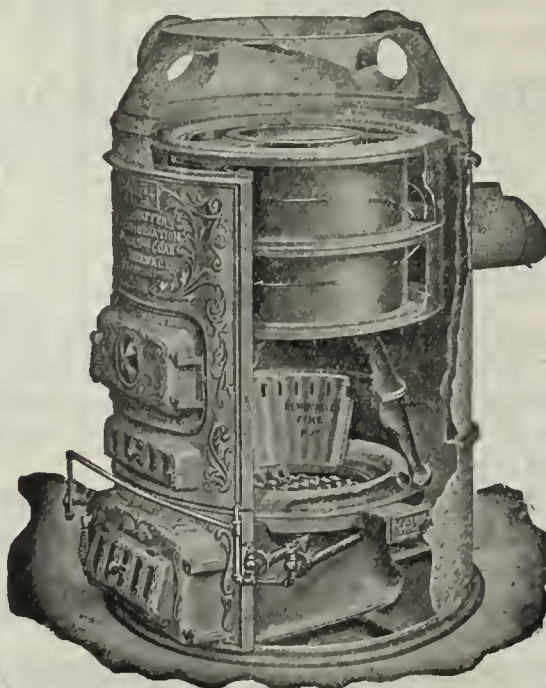
All Cast Iron. For
Hard and Soft Coal.
At Foundry Prices
to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

**The Forest City
Foundry and Mfg. Co.**
81 Elm Street,
CLEVELAND, OHIO.
Gray Iron Castings to order. High
grade only.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and
Durable Gas Furnace
On the Market.

It will heat a house as cheaply
with Gas as with Hard Coal, and
is so arranged that the change
from one fuel to the other can be
made in a few minutes, without
removing the burner or grate, or
disconnecting the gas piping.

Absolutely No Condensation.

For Catalogue and Price List,
write to

JOHN P. SCHAFFER,

18 WOOD ST.,

PITTSBURG, PA.

An Undisputed Fact

THAT

The Peach Oil Heater

has proven beyond all
doubts

An
Absolute
Success
As a
Powerful
Heater.



Economical,
Durable
and
Ornamental,

and at a PRICE that
brings it within the
reach of every House-
hold.



For further infor-
mation address

THE
DANGLER STOVE
& MFG. CO.,
CLEVELAND, - OHIO.

Championnd Marquart

Double Flue Ranges.

Only Double Flue Ranges in the
Market. The Greatest Fuel Saver.
Draw-Out Grate.

Handsomely Finished Through-
out. Prices Within Reach
of all.

CHAMPION
STEEL RANGE CO.,
CLEVELAND, O.



J. M. Litchfield, New York N. Y.
Kettlesen & Vegetan, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.

We are represented by the following
houses:

Lee-Glass-Andresen Hdw. Co., Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co., Kansas City.
Michigan Distributing Co., Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
Jacob Retterer, Chicago, Ill.
Corbett, Felling and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.



CABINET PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enamelling, etc.

Made in six sizes, single and double, for coal, wood,
natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

A 62-PAGE PAMPHLET

Comprising a Series of
Articles and Letters on
*Chimney Troubles
and Their Remedies*
published under the title



Contains a compilation from the col-
umns of THE METAL WORKER, of arti-
cles and correspondence relating to
house chimneys, defective flues, and
kindred topics, comprising a source of
information of the most practical and
reliable nature, on overcoming difficul-
ties which occur in the working of
chimneys, flues, etc.

To all who are interested in flues
and drafts, in their relation to
stoves, furnaces and house heating ap-
paratus, this book will prove instruc-
tive and helpful.

The Contents are as follows

	Page.
POINTS ON CHIMNEYS	7-32
An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES	33-35
This article presents information result- ing from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney con- struction.	
HOW TO IMPROVE A WEAK CHIMNEY	36-40
VARIOUS FORMS OF VENTI- LATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
CONNECTED FLUES DESTROY DRAFT	52-55
FAILS TO BAKE ON BOTTOM	56-62

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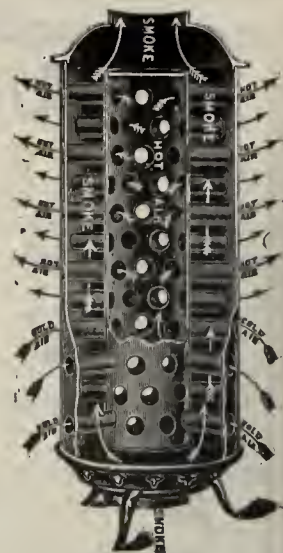
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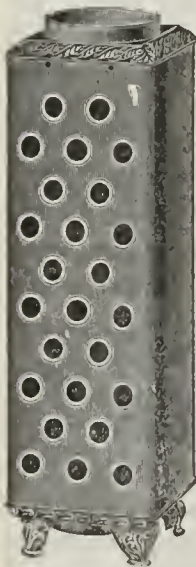
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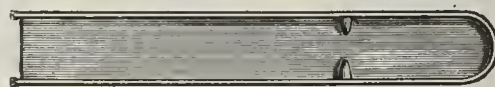
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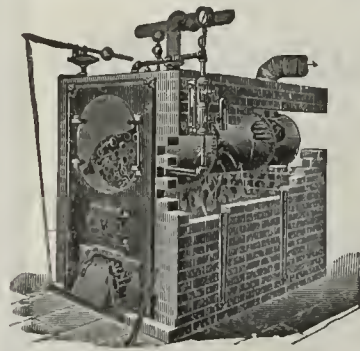
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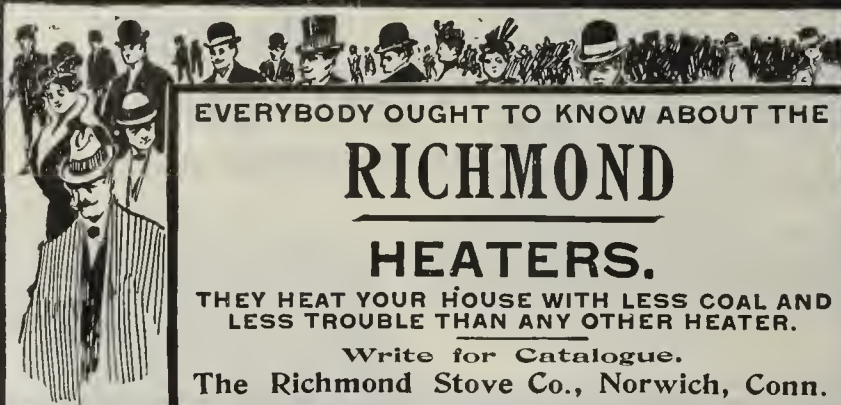
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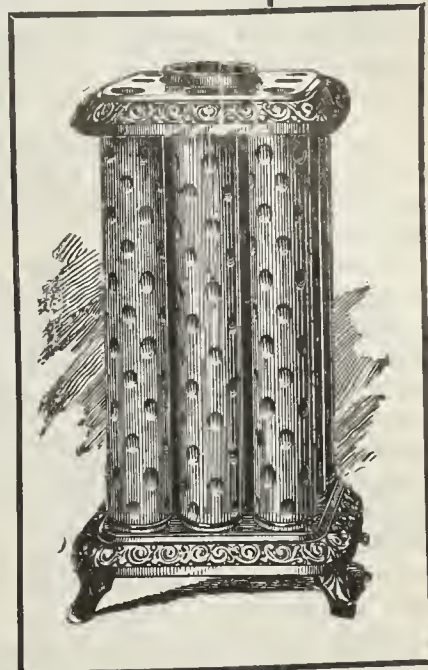
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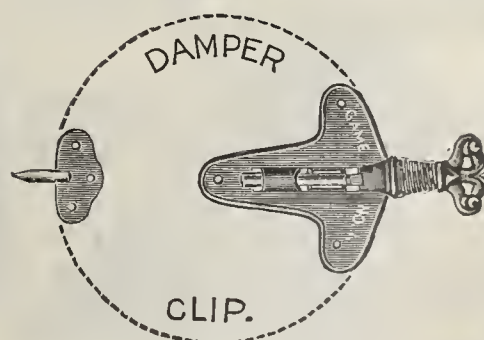
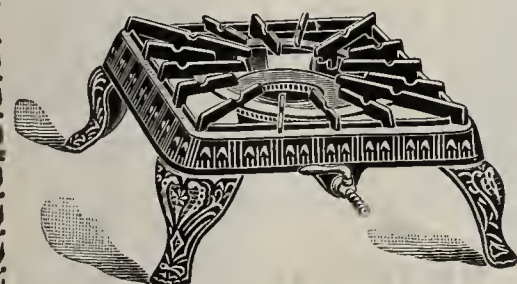
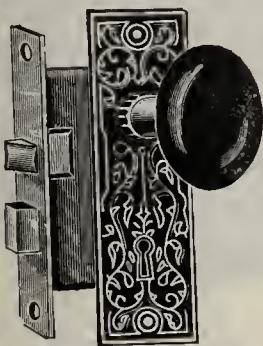
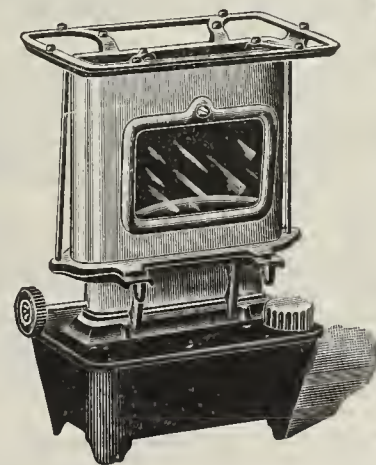
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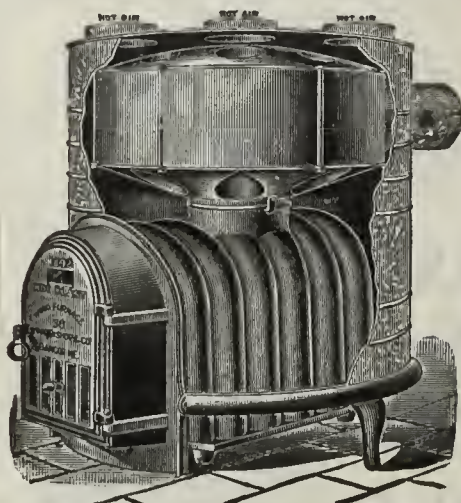
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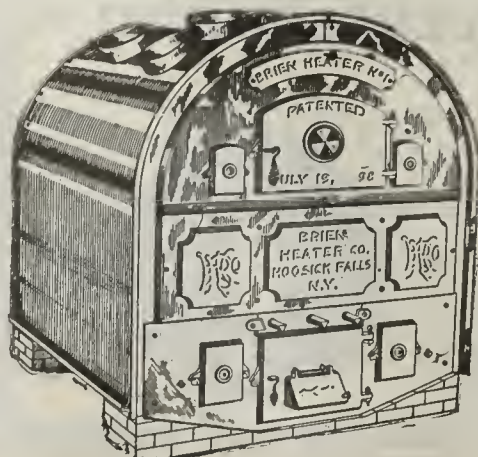
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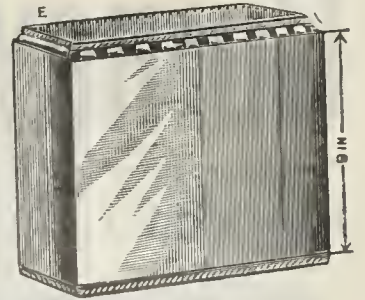
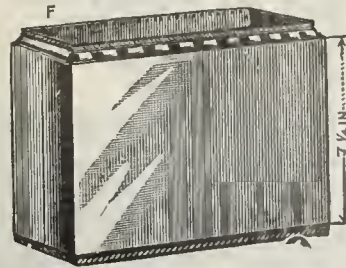
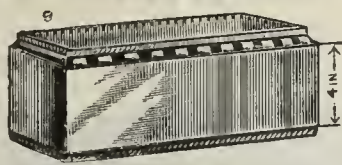
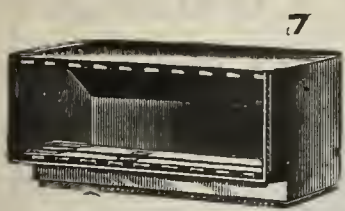


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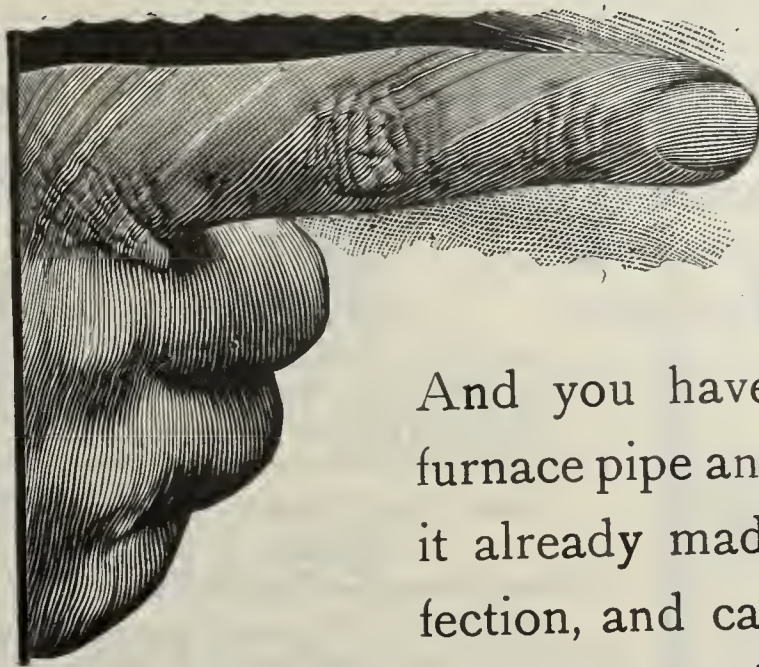
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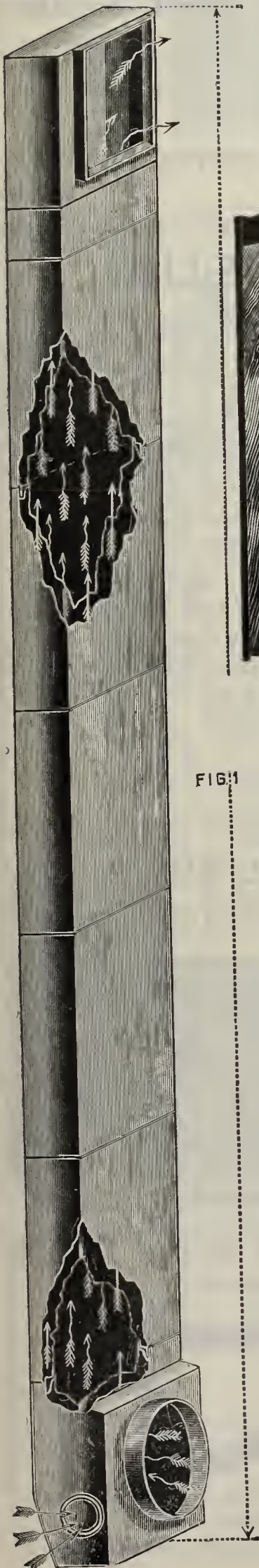
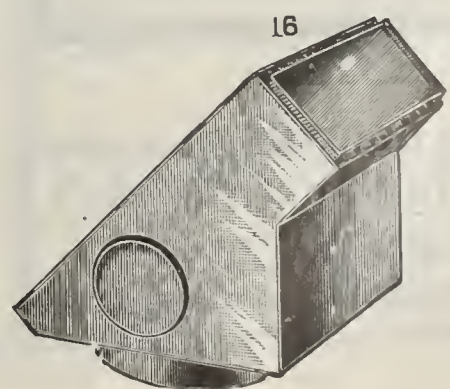
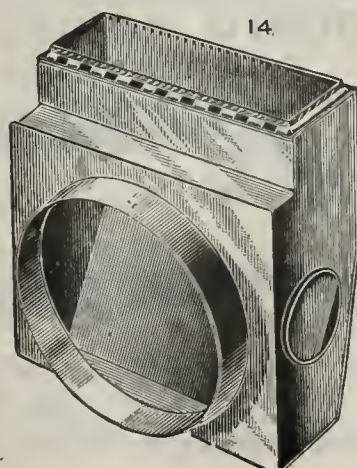
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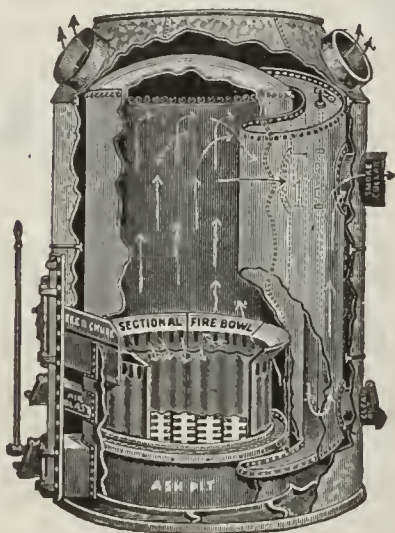
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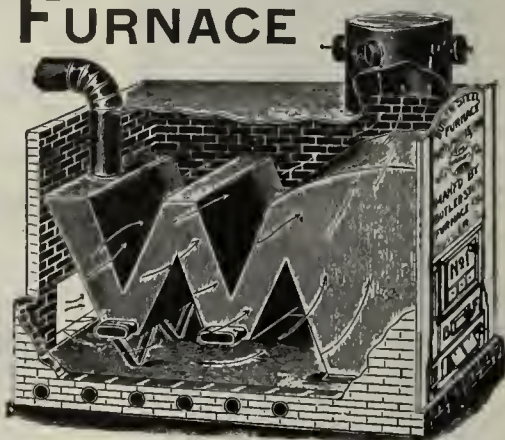
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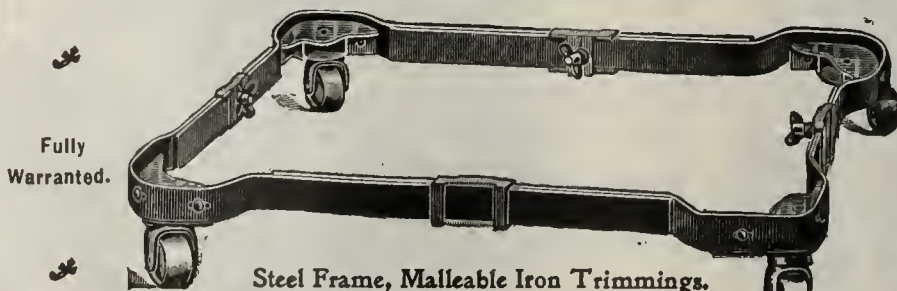
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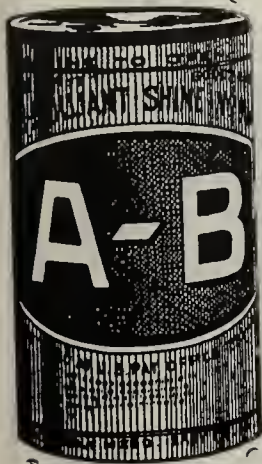
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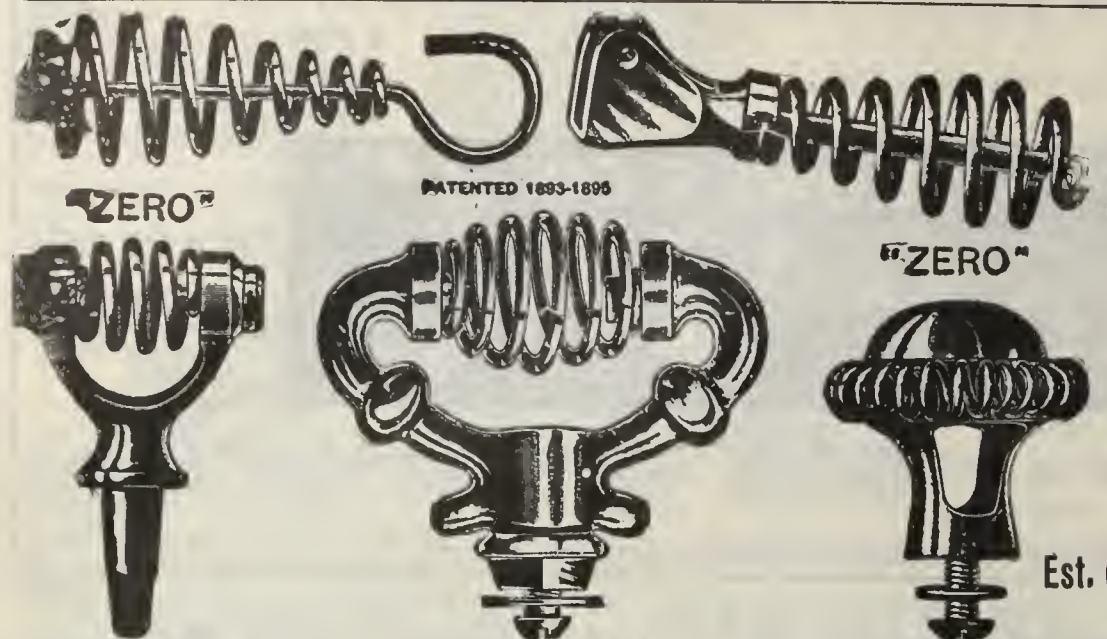


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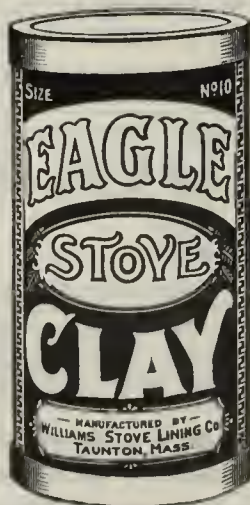
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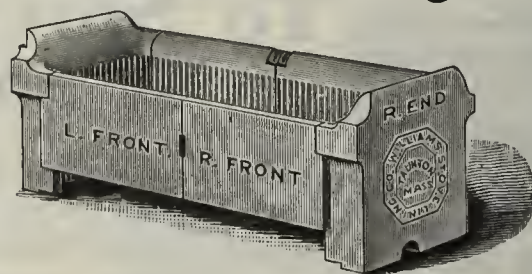
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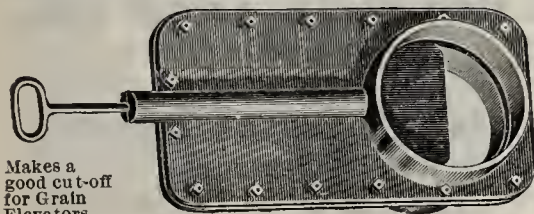
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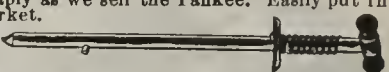
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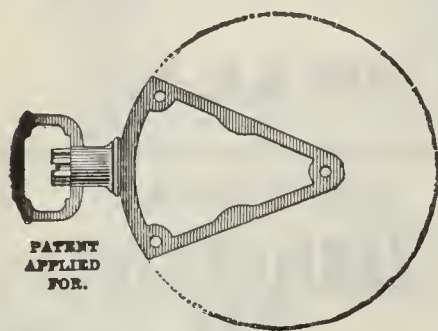
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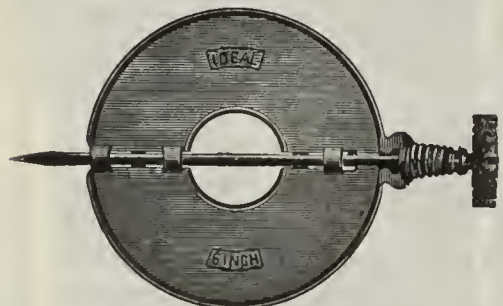
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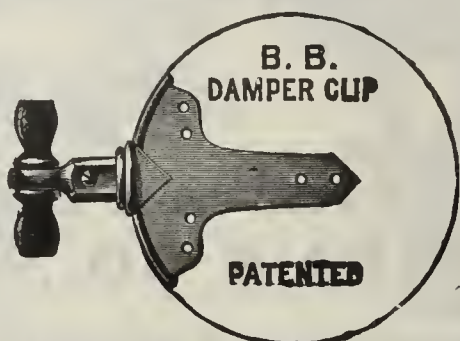
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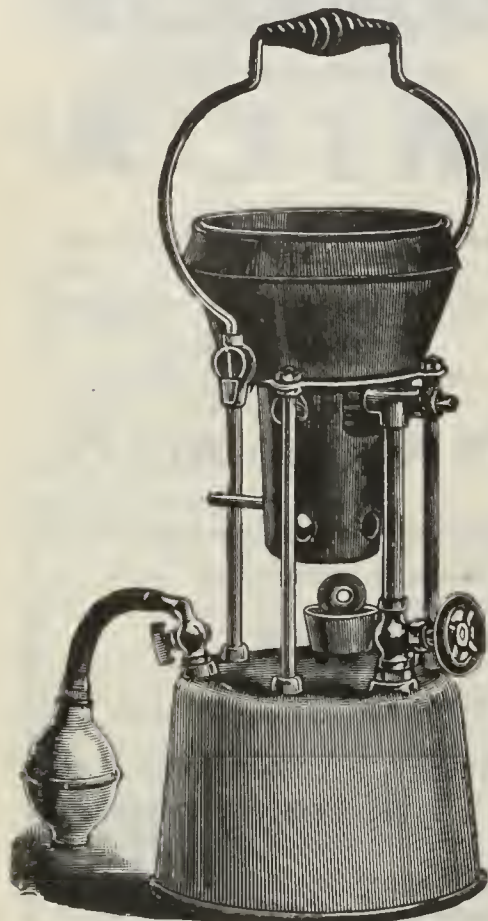
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The "DURO" Plumbers' Furnace

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Patent Wire Handle.

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It weighs less than any other Furnace now in use.

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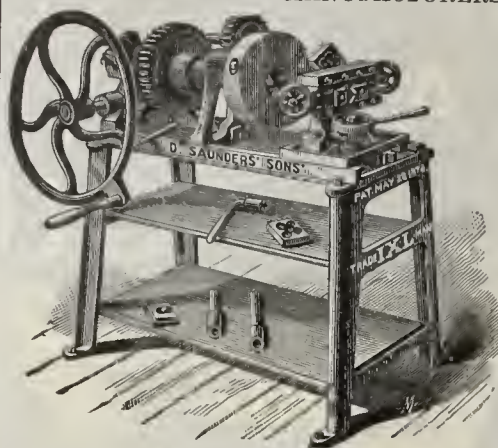
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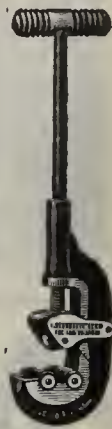
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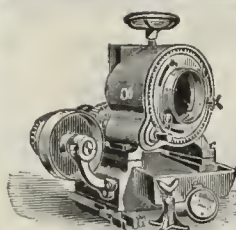
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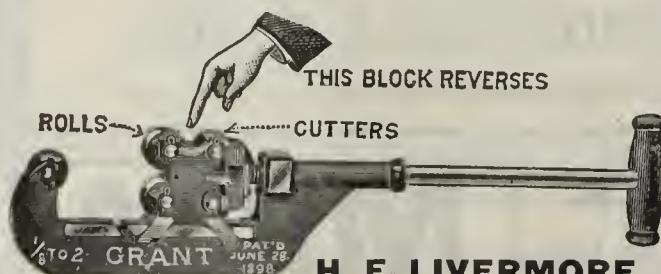
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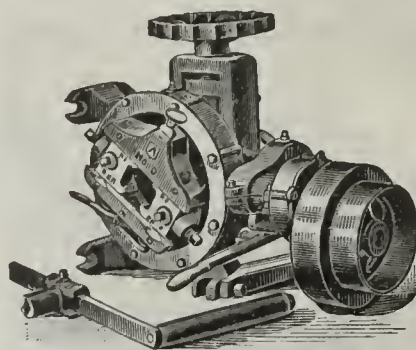
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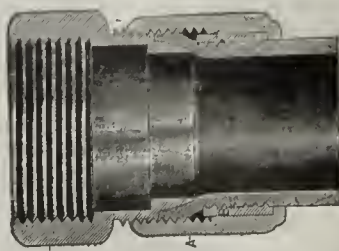
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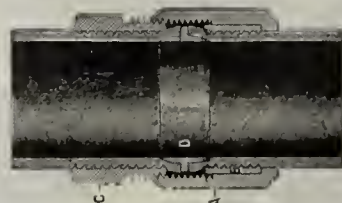
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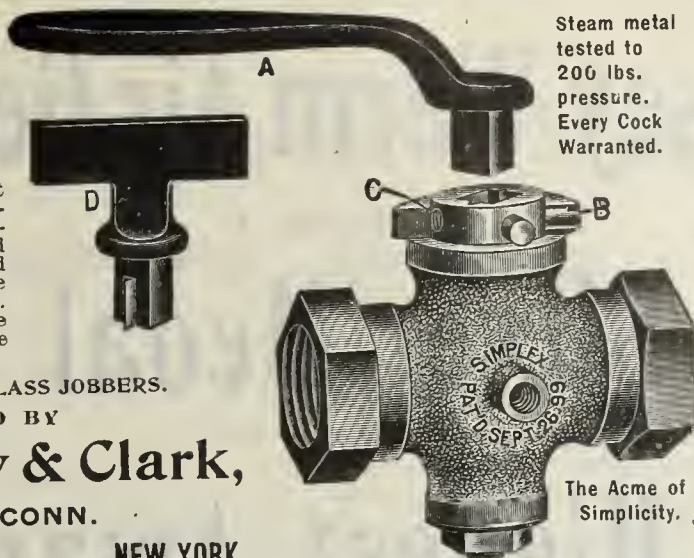
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Filters, Towel Racks, Etc.

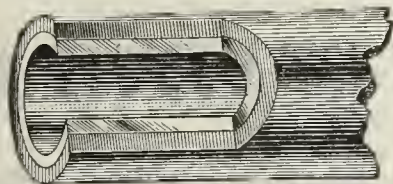
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For Pure Water.

Avoiding without extra expense all
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L. & R. PIPE.—Patented.



This lining cannot be torn from the
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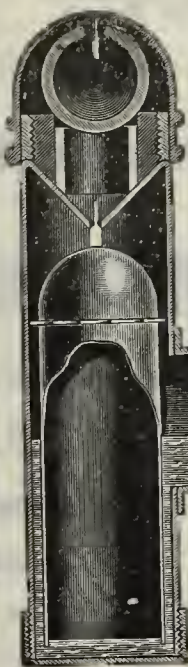
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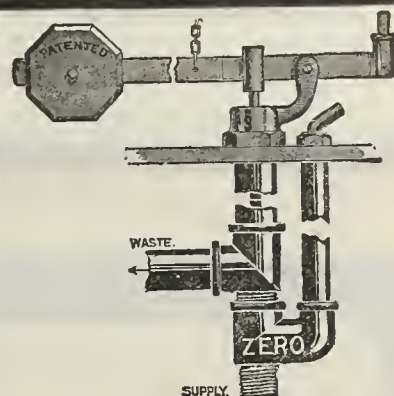
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It is fitted with a brass
air pump, which is much
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Is a positive seal against air
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**SAVE HALF**

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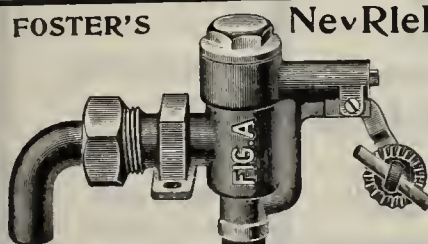
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They are simple and durable in con-
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This Chain Pipe Wrench
has interchangeable jaws. Improved method of
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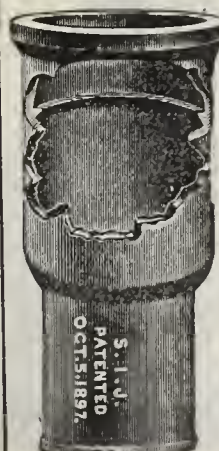
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Light and Heavy.
Saves labor, expense, and
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The Kelsey Warm Air Generator

RECEIVES A

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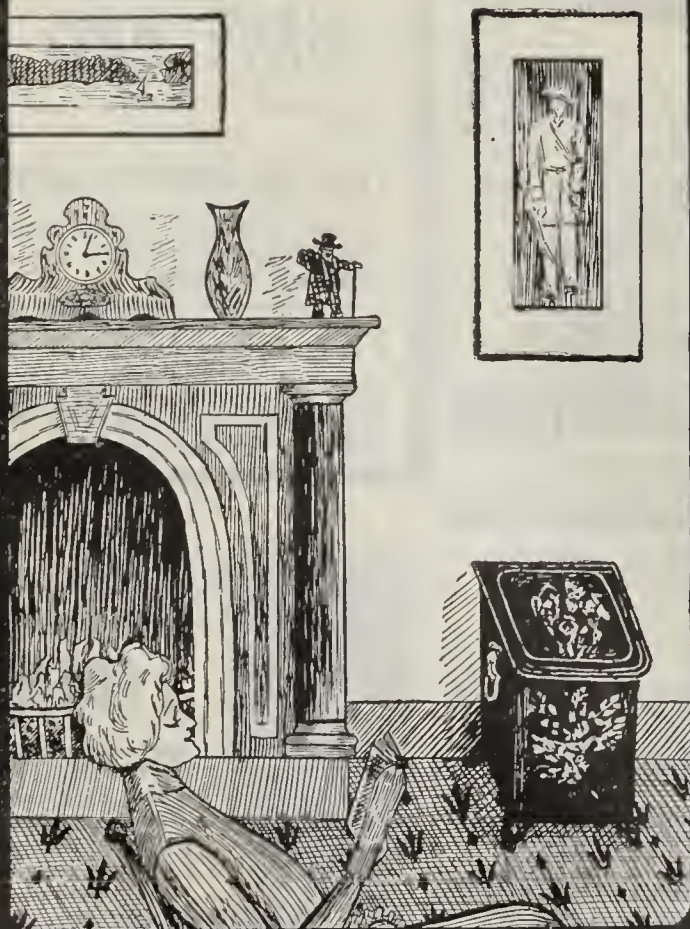
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NEW YORK AND CHICAGO.

New York, October 26, 1901.

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ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

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Reducing Costs.

One secret of the industrial progress which is being made by this country and the success which attends its efforts to market its products abroad is found in the unremitting pains and marvelous ingenuity which are put forth to reduce the cost of manufacture wherever it is feasible, no matter how insignificant the saving thus effected. An illustration of this is given in connection with the management of the plant of one of the great consolidations who make it a constant study to reduce in every possible way the cost of turning out their product, watching with scrupulous care every detail of manufacture. The manager of the mill observed that in the course of manufacture a certain line of goods were laid down again several times, involving obviously the necessity of taking them up again. To this evident waste of labor the attention of the men in charge was called that they might study on the question as to the way in which it could be avoided. As a result of this a number of bright practical men are grappling with the problem thus presented. It is not to be supposed that it will be found feasible to do away altogether with waste of this character, but some modifications of method have been already adopted which will result in slightly diminished costs. The same principle might doubtless with advantage be considered carefully and in a practical manner by many manufacturers.

A similar economy might be practiced in many a manufacturing or mercantile office in connection with the conduct of the business. Some may be surprised to know that a great corporation, whose profits under existing circumstances are very large and who are abundantly able to be extravagant, should practice careful economy in every department. Not long since on looking over the clerical force in a certain city where ten or twelve men were employed it was decided that one of them could be spared, the remainder being sufficient to take care of the work of the office. Accordingly the manager said he was given the unpleasant task of telling one of the clerks, a very satisfactory and observing young man, that his services were no longer needed. He was dismissed with a month's pay in advance to give him an opportunity of looking up another place. In this way a permanent saving of more than \$60 a month was effected, with, at the same time, an improvement in the efficiency of the whole force.

Bearing on this subject is the recent remark of a prominent and successful merchant that there is more

need and more opportunity for bright and able men now than ever before in his experience. They must be of such a make up that they fall in with the changing conditions and movements, and are able to think out new lines of work or to direct with special efficiency, so that labor is minimized and the greatest results obtained at the smallest expense.

Plumbing Trade Relations.

Evidence is manifested in the correspondence presented on another page of a strain in the relations which have existed for more than a year and a half, with profit to all, between the members of the National Association of Master Plumbers and the National Committee of the Confederated Supply Associations, through the working of the New York Conference Resolutions. It seems that it has been found impossible for the supply associations to satisfy all the demands of the master plumbers, although their good intentions have been shown in the recent appointment of an additional sub-committee to give special attention to the complaints brought to the attention of the Arbitration and Joint Conciliation committees. That there are some members of both associations who cannot be held by their rules and agreements is the cause for the abrogation of the New York Conference Resolutions, so far as they provide for arbitration and joint action in case of disputes and infractions. The law of the Medes and Persians cannot always be applied, even though a violator may be persistent and defiant. It was an open secret that matters were not altogether satisfactory, even during the conservative administration of ex-President Tierney, and that they have become irksome is shown by the action of President Hornbrook and his Executive Committee in issuing an open letter to the manufacturers and jobbers of plumbing goods giving the correspondence which led up to the abrogation of the objectionable sections in the resolutions. This letter was accompanied by a copy of the new Cleveland Resolutions, adopted at the meeting of the Executive Committee of the National Association of Master Plumbers recently held at Cleveland, Ohio, which are said to be practically the same as the old resolutions with the troublesome provisions eliminated.

Destruction of Street Mains.

Wherever the convenience of electrical street car transportation is enjoyed the destruction of city and private mains carrying gas and water has been noted. In many instances the action of electricity on these pipes has continued without any attempt to apply a remedy. It is pointed out by the authorities of Washington and some other cities that this destruction can be largely avoided by the addition of a second trolley wire to the system in use. Electricity necessary to operate the cars is sent out from the power house on a carefully constructed line composed of copper wire of ample size, regardless of the expense. It is necessary that this electricity, after passing through the motor running a car, shall be disposed of, and benefit is derived when this electricity is brought back to the power house. Some effort is made to this end by bonding the street cartracks by means of a copper wire. Here, however, the diffi-

culty arises of making a suitable and permanent connection, and economy in the size of the wire has left the electricity to return to the power house or not, as the case may be. In consequence, a large portion passes through the earth to the gas and water mains and other branches which belong to the city or to corporations or private owners. It has been demonstrated that where a second trolley wire is used this destruction is largely avoided.

The destruction of the gas and water mains by trespassing or vagrant electricity is held to be a violation of the rights of others. At a recent meeting of the Central States Water Works Association, at Evansville, Ind., the city solicitor of Dayton, Ohio, said that his city was about to take action through the courts against a street railroad company who had erected lines that caused destruction to cast iron, wrought iron and lead pipes in a few months, where, previous to the advent of the electric line, such pipes had stood the test of years unimpaired. In his argument he pointed out that no one would permit the waste water from a water power to run across his land, doing damage, without an action to recover. It is held that a company operating electric lines in various parts of the United States have no right to allow the electricity which has once been used to flow out so as to inflict damage upon others without being liable for actions to recover damages. This brings up a very interesting question. There is a strong probability of persistent litigation to avoid responsibility, and it is improbable that this question will be decided in the first court in which it is presented.

Practical Philanthropy

Probably no agency for the elevation of the boys of the crowded east side of New York City is of more practical value than the evening trade school connected with St. George's Episcopal Church, to the work of which reference is made in another part of this issue. Starting about eight years ago with a handful of boys on a single floor of a tenement house, it has grown until it now occupies the whole of a five-story building, while so great is the demand upon the advantages offered by the school that it has become necessary for the directors to limit the attendance of each pupil to two evenings a week, so as to give the hundreds of students a chance to reap at least a portion of the benefits it confers. Primarily a kind of club designed to bind the boys together, amuse them and keep them off the streets in the evening, the school has now become an important factor in their lives, affording them the means of becoming eventually skilled mechanics earning good wages, and useful and self respecting members of the community. As the boys who attend the school are drawn mainly from the class of very poor families that inhabit the part of the city in which it is located, the entire tuition is given without charge. Thus valuable instruction is placed within the reach of boys who could not possibly afford to pay for it.

This is a form of practical philanthropy which might be followed elsewhere with great advantage to the community at large, and to the boys who reap its benefits in particular. The public spirited and benevolent men who conceived and started this valuable branch of the work of a great working city parish probably builded better than they knew. In helping the boys to help themselves they are providing them with the best kind of equipment for making a success of life. No claim is made that the school turns out skilled mechanics, but it does impart to its pupils sufficient training to enable them to choose intelligently the trade they would like to master,

and to give them advantages of mechanical education superior to those which ordinarily are obtained among the employees in workshops. No development is to be more desired than the multiplication of such practical institutions for the benefit of the younger generation, especially where, as in this case, the boys are unable, through poverty, to obtain the trade training offered by such institutions as the great New York Trade School and other establishments of the kind, where the payment of a fee, however small, places their advantages out of the reach of such as those who inhabit the congested tenement house district in which the St. George's School is located.

Uniformity of Prices for Raw Material.

A somewhat threadworn argument is marshaled in line by those who are eager to prove that 17 cents is a satisfactory price for copper. We are gravely assured that the manufacturers who use the metal as their raw material do not object to that price, nor, in fact, to any price, so long as it is stable. We are advised that the one overpowering desire of the manufacturer is uniformity and regularity of values, that he sighs for the times when his raw material shall not show fluctuations in prices, because then he may dismiss the perplexing questions attending his purchases and devote his untrammelled energies to his natural field, that of manufacturing goods. It is urged that to a considerable extent uniformity in prices of raw material involves, too, absence of variation in the prices of manufactured goods, and that this, too, is in the direction of an ideal condition for a manufacturer.

It would be idle to deny that this plea, uttered by the sellers of the crude product, is echoed freely and frequently in manufacturing circles. Yet it looks dangerously like a confession of weakness. A manufacturer is and must be more than a converter and shaper of raw material. He abdicates important functions, big with the possibilities of profits, when he abandons the hope and the ambition to purchase to better advantage than his rivals and thus loses opportunities. Every manufacturer must be in some degree a merchant. When an industry reaches the point that its leaders profess their willingness to sacrifice the chance of buying to good advantage for the sake of peace of mind, then that industry carries the seeds of decay.

Teaching Languages by Mail.

Instruction by mail in almost every department of knowledge, aside from the purely academic subjects, has been carried to a high degree of perfection by the International Correspondence Schools of Scranton, Pa., and the efficiency of this method of education has been fully proved by the successful results achieved by the pupils of the institution. The latest department of instruction recently added to these schools is among the most interesting as displaying a remarkable adaptation of modern mechanical facilities to the work of teaching. A complete course in modern languages is being given by mail. At the first blush it would seem scarcely possible to thoroughly impart such instruction, involving the niceties of pronunciation and idiomatic construction of a foreign tongue, otherwise than by word of mouth and in the presence of a teacher. But this difficulty has been surmounted with the aid of the phonograph. In addition to specially prepared instruction papers, spoken words and exercises are sent to the student and repro-

duced through the phonograph, while words and exercises are spoken by the student into the phonograph and sent to the schools for correction and criticism. Thus the pupil is enabled not only to learn to read and write in French, German or Spanish, but also to speak those tongues with correct accent and expression. This method seems to be the perfection of convenience. The student does not have to sit for an appointed time with his teacher, whether he feels like listening to him or not. He has his phonograph and records with him always, and can study when and where he pleases. The claim is made that more progress can be made in six months' study by this system than in the same length of time spent abroad, with the added advantage of obtaining the knowledge at a comparatively small cost. To the young man embarking on a business career familiarity with a foreign language is a valuable asset in these days when our commercial relations with foreign countries are constantly growing more important. Comparatively few young men can afford the time or the money needed to study foreign languages abroad, whereas instruction such as that provided by the correspondence method is within the reach of many. The conspicuous success attained by the Germans in the extension of their foreign commerce has been due largely to the fact that so many of their young men familiarize themselves with foreign languages, and are thereby enabled to come into closer touch with customers in other countries than they could if ignorant of their language. It is time that the business men of the United States gave more attention to this essential point in the cultivation of foreign trade.

Editorial Notes.

Probably the American wage earner has never received relatively higher wages nor had better prospects for a steady continuance of employment than at the present time. Recent labor reports show that the number of unemployed workers is remarkably small, while advices from all industrial centers indicate that the outlook for uninterrupted operation of mills and factories through the winter and spring was never brighter. The fact that most of the strikes and labor disputes of this year have turned on the question of hours of labor or the recognition of labor unions rather than on grievances connected with wages illustrates the favorable pecuniary conditions which labor has been enjoying during the opening year of the twentieth century.

The tide of prosperity which this country is experiencing naturally has been accompanied by an increased immigration. Official statistics recently published show that nearly 20 per cent. more immigrants landed here during the last fiscal year than in the preceding one. Nearly one-half of the foreigners who came in were Italians, Hungarians, Slavs and Poles, one-third of the total immigration being composed of Southern Italians. Under these circumstances it is not surprising to learn that of the 388,931 persons who were permitted to land 107,323 were illiterates, a much larger proportion than ever before. This is to be regretted. While there is always room and a welcome in this country for desirable immigrants who will make useful citizens, the influx of ignorant foreigners of a low class is not to be desired. It is likely that the next Congress will take steps to revise the immigration laws, so as to prevent the country from being overrun by an undesirable class of immigrants.

The Washington Stove Dealers' Association.

An organization of the stove dealers of Washington, D. C., was formed more than a year ago and is now in successful operation. The trade will be interested in the information given below in regard to the lines on which it is working and what it has accomplished for the benefit of the trade. In this connection we take pleasure in laying before our readers the following letter from the president of the association:

WASHINGTON, D. C., October 21, 1901.

To the Editor: I have observed with pleasure mention in *The Metal Worker* of a disposition being manifested by retail stove dealers to organize throughout the country for mutual trade protection. That the stove dealers in every city should organize for the purpose of obtaining and preserving trade rights is beyond question. No city in the United States is more in need of protective trade associations than our Capitol city.

Realizing the necessity of an association, a few of our stove dealers endeavored to effect an organization about two years ago. The conditions existing at that time between wholesale and retail dealers were as follows: 1. Jobbers bought goods at a lower price than the retail dealers to enable them to sell to the retailers at a profit. The jobber utilized his advantage to undersell the retailer and sold goods to the consumer at the same price as he sold to the retail dealer. This procedure caused the consumer to demand goods of the retail dealer at the same figures as sold by the jobber. The jobber thus established a low rate of prices, with which the retailer could not compete.

2. Manufacturers sold, and do sell, stoves, furnaces, &c., direct to architects, builders and consumers, thus competing with their retail customers. 3. A few manufacturers who did not retail goods sold to jobbers at a lower rate than accorded the retail dealers and the jobbers sold direct to the customers of the retailers. People went to the store of the retail dealers, examined such stoves as required and then purchased the goods from the jobber, who carried no stoves in stock; the jobber making the sale at the expense of the retail dealer.

A short time ago a stove dealer purchased a line of stoves and ranges and had the manufacturer apply a new name to each of the stoves as protection against the avarice of the jobber. The sagacious jobber ascertained by whom the stoves were made and informed a customer of the stove dealer that he could furnish the same stoves for less money than sold by the retail dealer. As the jobber could not secure the stoves from the manufacturer he evidently intended to purchase them indirectly, a proceeding which can be remedied only through a national organization.

The work of our association to date, while beneficial, is far from satisfactory. Jobbers still continue to sell goods to consumers and deal in stoves, ranges and furnaces to the detriment of the retail dealer.

Inclosed you will find a circular letter, a copy of which was sent to every stove dealer in Washington in an endeavor to secure the co-operation of all concerned.

Also inclosed is a copy of an agreement between our association and a Washington firm who, at present, constitute all the jobbers, in their line, in our city. The character of the agreement will convey to your mind the "grip" which the Washington jobber has on the retailer. This agreement will terminate January 1.

Our association has been discussing the question of a national association, and we think steps should be taken at once toward organization. I know of no better medium for bringing the stove dealers in communication on the subject than *The Metal Worker*. This is the age of organization, and the individual who, in business dealings, has the influence of a strong association, is treated with much more consideration than is accorded a single personality. And as the influence of a local association benefits the individual, so the prestige of a national organization benefits the local association.

Washington is conveniently located for a convention

of Eastern and Southern stove dealers. January would be a good month for a meeting.

These suggestions are for the purpose of inviting opinions of those interested as to the best plan for effecting a national organization. Communications addressed to the writer will be presented to the next meeting of the Stove Dealers' Association of the District of Columbia, which will occur on the first Wednesday in November.

Very truly,

F. S. HODGSON,

President Stove Dealers' Association, Washington, D. C.

AGREEMENT BETWEEN THE JOBBERS OF STOVE REPAIRS AND THE STOVE DEALERS OF WASHINGTON.

We give below the substance of the agreement with the stove dealers of Washington which has been made with the principal jobbing house of that city, as referred to in our correspondent's letter above. The circular letter relating to this matter naturally divides itself into three parts, the first reciting what the jobbing house agrees to do in its relation to the trade; the second covering the agreements of the Stove Dealers' Association in regard to the purchase of repairs, and the prices at which they will be sold, and the third covering provisions to secure the carrying out of these agreements through the Investigating Committee. The essential parts of this circular are as follows:

To the Stove Dealers' Association of Washington:

In consideration of the stove dealers of Washington agreeing to purchase all their repairs for stoves (except repairs for such stoves as they may be agents of the manufacturers for) from Rudolph, West & Co., the said Rudolph, West & Co. agree:

FIRST.—To sell to the legitimate trade—i. e., to parties engaged in the business of selling or repairing stoves and having an established place for the conduct of said business—repairs as follows:

BALTIMORE AND PHILADELPHIA MAKES.

(Bartlett, Hayward & Co., B. C. Bibb Stove Company, Chesapeake Stove Company, Abram Cox Stove Company, Keeley Stove Company, Leibrandt, McDowell Stove Company, S. B. Sexton & Son, I. A. Sheppard & Co., A. Weiskittel & Son and Wm. E. Wood Company.)

Basket grates.....	} 5 cts.	Grate rests.....	} 7 cts.
Magazines, heavy.....		Oven plates.....	
Fire pots.....		Oven racks.....	
Sexton's furnace repairs.....		Sifter grates.....	
Fire plates.....		Fire plates.....	
Sexton's r'ge and lat. grates..		Light grates.....	
		Covers.....	
		Cross pieces.....	

NEW YORK, PENNSYLVANIA AND SOUTHERN CASTINGS.

(Boynton Furnace Company, Buckwalter Stove Company, Danville Stove Company, Graff & Co., Lebanon Stove Works, W. J. Loth Stove Company, Orr, Painter & Co., Raymond & Campbell, Richardson & Boynton Company, Richmond Stove Works, Syracuse Stove Company, Thomas, Roberts, Stevenson Company, Union Stove Works and Yeager & Hunter.)

Fire pots.....	} 6 cts.
Flat furnace grates.....	

All other castings sold by the pound at 7 cents.

Terms: Net; longest term of credit not to exceed 30 days.

SECOND.—To in no way solicit or encourage retail business to come to them. When compelled to sell to consumer to charge not less than 11, 12 and 13 cents per pound for repairs, being an advance of 6 cents per pound over trade prices, and to sell bricks at not less than \$1 per set.

THIRD.—To at all times afford the Investigating Committee, hereinafter provided for, every facility for investigating violations of foregoing stipulations.

FOURTH.—To aid the stove dealers of the District of Columbia to maintain the prices they agree to sell at by assisting the association in getting the entire trade of the District of Columbia to become parties to this agreement, and any other legitimate means.

The members of the Stove Dealers' Association of the District of Columbia, and such other dealers whose signatures may be procured to this agreement, agree, in view of the foregoing concessions made by Rudolph, West & Co.:

FIRST.—To buy all repair for stoves, except the repairs for such stoves as they may be agents of the manufacturers for, from the said Rudolph, West & Co.

SECOND.—To sell at retail heavy casting (grates and fire pots) at not less than 10 cents per pound; light cast-

ings (cross pieces, covers, oven plates, &c.), at not less than 12 cents per pound, and bricks at not less than 75 cents per set.

THIRD.—To state, in writing, when signing this agreement, the name of the manufacturer for whom they are agents and for whose stoves they desire to continue to order repairs direct from said manufacturers.

It is mutually agreed by said Rudolph, West & Co. and the signers of this agreement:

FIRST.—That a committee of five be appointed and known as "The Investigating Committee," with full power to take evidence and decide whether or not the signers of this agreement have violated the provisions thereof; and that their finding shall be final and without appeal.

SECOND.—That a penalty of \$5 for each of the first three violations of this agreement be due and payable to the said Stove Dealers' Association of the District of Columbia immediately on the report of the Investigating Committee that a signer has been found guilty of violations of this agreement. After being found guilty three times the said signer's name shall be stricken from the agreement. The money collected from violators to be placed in the treasury of the Stove Dealers' Association of the District of Columbia.

THIRD.—That the said Rudolph, West & Co. shall have one representative on the said Investigating Committee.

FOURTH.—That all violations of this agreement coming to the knowledge of signers be reported with the utmost promptness to the chairman of the Investigating Committee.

FIFTH.—That this agreement go into effect at once, and remain in force for one year from date.

Approved March 13, 1901.

WHAT THE ASSOCIATION HAS ACCOMPLISHED.

Under date September, 1901, a circular was issued by F. S. Hodgson, president, and J. A. Pierpoint, financial secretary, in which a condensed statement is made of the purposes of the association and what it has thus far accomplished. It will be observed that reference is made to the very unsatisfactory condition of things existing before the organization of the association, and the steps which have been taken to correct the evils complained of. There is little doubt that similar evils exist in many cities and towns and the efforts made by the trade in Washington will be regarded with special interest. The substance of the circular is as follows:

We respectfully submit for your earnest consideration a summary of part of the work accomplished by the Stove Dealers' Association of the District of Columbia.

By social and business intercourse dealers of the association have eliminated unfriendly competition which formerly existed as the result of efforts on the part of customers to incite one dealer against another for selfish motives.

Mutual advantage has resulted from the discussion, from time to time, of important questions relative to business interests.

The first important work of the association was obtaining a modification of the plumbing regulation which prohibited stove men from connecting ranges with boilers. The association, through a committee, was instrumental in having amended the plumbing regulations so that dealers in gas ranges were given the privilege of connecting gas ranges with gas fixtures in buildings. The fact that arrests and convictions of stove men for violating this law have been made attests the importance of the change to all dealers and emphasizes the value of organization.

The question of ruinous competition between the jobber and the retail dealer has been thoroughly discussed and disposed of, for the present, to the satisfaction of all concerned. Jobbers have been induced to advance the price of stove brick to the consumer from 50 cents to \$1.

The rates for castings per pound have been raised to 11, 12 and 13 cents. The beneficial results effected by these changes in prices have been attested to by almost every member of the association.

The association has taken effectual action in behalf of individual members who have submitted to the association personal grievances for adjustment.

There are many other questions of importance which require the united action of every dealer in the stove and tin business in the District of Columbia.

The association desires to have the name of every one legitimately engaged in the stove and tin business enrolled as a member.

As every dealer, whether a member or not, has been benefited by the work of the association, those not members are, to some extent, in duty bound to apply for mem-

bership. This is the age of organization, and the individual without the prestige of an association does not receive the consideration due him, a fact that has been exemplified by the experience of stove dealers in the courts prior to the advent of the Stove Dealers' Association.

Better Furnace Work.

BY A. J.

Architects and builders, as well as their customers, have noted the fact that during the past year or two hot air furnaces have been used for heating some of the largest and finest residence buildings that have been erected in different parts of the United States. This is substantial encouragement to those furnace men who have stood stanchly in defense of good furnace work, and who have insisted upon doing it and securing the price that such work is worth. I make this statement in order to bring to the notice of furnace men generally the fact that furnace work has not lost prestige in competition with the other systems of heating, and that it is the duty of every furnace man to study methods and use his energy to secure a more general use of a better class of furnace work.

I have no hope of securing now or at any time in the future a millennium for hot air furnace men. They will always have competitors to contend with, who are too ignorant to know how to do good furnace work, either in the details of workmanship, or in putting up the furnace, to say nothing of that knowledge of the movement of air currents and the effect of the outside atmosphere, which must be understood in order to lay out furnace work as it should be done. The annoyance caused by these men can be alleviated by rendering them such assistance and such encouragement in their efforts as they are capable of receiving.

There is another class that have all the gray matter necessary to do first-class work, but who are thoroughly mercenary and are only anxious for what money they can get out of their work. These fellows are more difficult to deal with, but that is no reason why missionary work should not be conducted among them.

READY TO IMPROVE.

The great multitude of furnace men, however, are honest and ambitious, and willing to do better when they know what is better. These men form the great majority, and it is among them that the intelligent and progressive furnace man and the furnace manufacturer should labor to improve the general character of work. Some of these men are good workers, and their work in detail is above reproach, but in many instances they do not understand how to determine the heating capacity of a furnace or the heating values of different styles of construction. Nor do they understand the size of heaters, the sizes of pipes for hot air supply or the vent ducts required for heating different classes of buildings. To assist these people by giving them information on the points in which their knowledge is deficient would be to remove, in many instances, a disagreeable competitor from the field. Men who do not know the difficulty of heating a building will agree to heat it for less money than would a more competent man. If they secure the contract either they will lose money, or, if they are paid before their heating systems are thoroughly tested, the building cannot be heated in extreme weather, and furnace work gets another black eye. •

PROTECTION FROM OPERATIVE BUILDERS.

There is still another class of furnace men who need assistance, and they are the men who do good work, both in designing and in construction, but who need a little business training in order to avoid being made use of by shrewd building operators. The building operator of this character is ever on the lookout for some competent man who is willing to take a contract for heating a large number of buildings at a very small margin of profit. The building contractor knows that these buildings will not be ready for the furnace man so that he can do his work with advantage to himself and keep the cost

within the figures at which he has estimated. He knows that some of the buildings will be ready at one time and some at another, and that as the construction progresses the furnace man will be called upon to complete his work at a sad disadvantage to himself, which will result in the loss of no small amount of time and labor, and may finally eat up the expected profit until an actual loss takes its place. If it was possible to educate all the furnace men so that they would know better than to take contracts of this character at the low prices set by the building operator, the work could be made to pay a profit to those who do it, instead of being the means of embarrassing the contractors by an eventual loss.

Another source of discouragement is that even though a large contract of this kind may be carried out without actual loss, there is really no profit in it, for often the small contractor has allowed his small custom trade to be disappointed and scattered, while his whole energies were concentrated on one big contract. Thus he is sure to suffer a loss from having taken up the big job.

PROGRESSIVE SHOP METHODS AND EQUIPMENT.

Then there are shop methods and details of construction which enable some shops to produce furnace drums, casings, pipes and fittings at a far lower price than the small shop with a limited equipment of tools. Usually the men who do the high grade furnace work which is used in handsome residences have the best equipped shops, and if they engaged on contract work, with their better equipment and better business experience, they could eventually secure a better profit from such work than the smaller and less favored contractors would make out of it.

POOR FURNACES HURT THE TRADE.

In many instances furnace manufacturers make, in addition to their good furnaces, some hot air furnaces that are sold at such extremely low prices that it is impossible to conceive that they will pass through even the first season without becoming greatly impaired. The sale and use of such furnaces result in a dissatisfaction with hot air furnace heating, which is reflected along the whole line of hot air furnace work. At the outset I pointed out that some of the handsomest residences that have been erected in various parts of the country were heated with hot air furnaces. I recognize that where there is one of this class of buildings erected, there are hundreds and even thousands of the cheaper class. I would point out, however, that that is no reason why the cheaper class of buildings should not be equipped with a hot air furnace of good construction, such as would be durable in use and economical in operation.

To secure reform some co-operation will be needed between furnace men in all the larger cities and in adjacent country towns. The men who do first-class work must meet and discuss and explain to their less well informed brothers some of their methods. No doubt many men who do first-class work will be more or less reluctant to explain their methods to some men who they feel certain will utilize the information for cutting into their trade and thus become a greater nuisance to them than they are without this assistance. However, in all attempts at elevation of morals or methods sacrifices must be made, and in the end benefit will come. There is no better way of helping the furnace trade than in discussing methods for improving its condition. Those who can write and describe their ways of doing work, their methods of making contracts, of selling heating systems, and of collecting bills will no doubt find *The Metal Worker* open to their contributions for the benefit of others in the trade.

GEORGE B. DONAVIN & Co., Columbus, Ohio, are distributing among the Stove trade an eight-page pamphlet devoted to their Double Action Gas Heating Stoves. The Stove is oblong in shape, having air tubes run through it from top to bottom back to the asbestos reflector, which is behind a very prettily designed illuminating front. The products of combustion rising from the flame must assume an indirect passage, caused by suitable baffle plates, before they find outlet at the back, the stove being designed for a chimney connection.

THE NEW YORK STOVE TRADE.

This week gave the first evidence around Beekman and Water streets, New York, that the stove season had about reached its high. In addition to the usual number of trucks used for the delivery of stoves and repairs to the transportation companies, a number of wagons of dealers from the outlying suburban districts were to be seen, as well as those from nearer the center of the city. The faces of many out of town dealers were also observed hurrying from one stove house to another on matters relating to some special information, repairs or goods needed in their business. This is a healthy sign of the trade, and it is further substantiated by the fact that stocks of many lines of goods in the warehouses have been exhausted, and the present supply represents the every day hand to mouth production of the foundries. It seems, moreover, that this condition is not confined to stoves alone, for the furnace branch of the trade is also enjoying a good run of business. A notable feature in the New York trade is the increased sale of oak stoves, and a transfer of the demand from the high priced square parlor stove to this new, popular favorite.

Many of the manufacturers are satisfied with the trade that is being done and attribute the fact that good prices are being secured on many lines largely to the work done in the association, which has met periodically at the Astor House for the past year and a half. Nevertheless, there is no hesitation in the expression of the opinion that too many goods are sold at lower figures than could be secured if a little more backbone was possessed by some who are eager to dispose of their stock. Naturally, while the manufacturers are so busily engaged with the regular rush of business at this season, it would be difficult to secure a proper representation at a stove association meeting. Yet, in view of the fact that there is evidence of a need of a reform in the matter of concessions, it is evident that time could be well spent at a meeting held for the purpose of discussing the prevailing conditions and forecasting the future with a view to reaching an agreement as to the course that would be most profitable, provided it should be followed in a measure, if not entirely, by all who are most closely interested.

Born Steel Ranges.

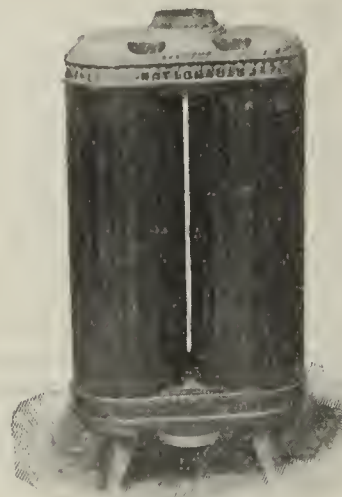
A neat pamphlet of 24 pages, known as Catalogue No. IX, has just been issued by the Born Steel Range Company of 122-126 Superior street, Cleveland, Ohio. It is devoted exclusively to Born steel ranges for family use, and in the early pages the essential features of construction are described at considerable length. The statement is made that one continuous plate constitutes the back and both sides of the stove, while another forms the front, so that there are but two joints on the outside, both of which are made air tight. The end walls and those around the fire box and reservoir are of double thickness, with an interlining of asbestos board. The sides and top of the steel oven are extra heavy, shaped from a single plate, flanged at the front and back and closely riveted to the walls. The company refer to the fact that the shape and thickness of the patent removable oven bottom is proof against warping, cracking and burning out. It is level and smooth and so clamped and braced in position as to be easily taken out, if necessary, without damage to the range. The drop door is of steel inside and planished iron outside, and has either a smooth malleable iron frame or an ornamental cast frame polished and nicked, as may be desired.

The company state that in all the sizes, except the 100 Series, the coal grate can be reversed for burning wood, while a locking device on the front keeps it from dropping back. In the 100 Series the grates draw out through the front. The flues are proportioned to the fire box and constitute an extended combustion chamber, having the effect of heating all parts uniformly and reducing the amount of fuel required. Another feature to which attention is particularly directed is the cast iron flue, which, it is stated, will never rust nor burn out. The Born is shown in a number of styles and sizes

adapted to meet varying requirements. In connection with each style is presented a table giving the sizes in which the stove is made, the dimensions of the oven and top surface and the prices. Several pages at the close of the catalogue are devoted to extras, such as water fronts and backs, attachments, grates, &c.

The National Draft Regulator and Radiator.

We illustrate herewith the National draft regulator and radiator that is being manufactured and placed on the market by Sprecher Bros., Ephrata, Pa. This device is claimed to be built on scientific principles so as to radiate the heat outwardly and circulate the air in the room upward through the interior of the radiator. The corrugated sheet iron casing is inclosed, top and bottom, by a suitable cast iron head and base, and incloses an inner circulator attached to the heads, the latter being supplied with ducts and inlets so arranged as to give perfect circulation without checking the draft. The casing and head are held together by suitable lugs, no bolts or rods being used, the radiator can therefore be easily taken apart for cleaning or repairs, which, if nee-



The National Draft Regulator and Radiator.

essary, can be done by any tinsmith at a trifling cost. The National draft regulators and radiators are made for use in connection with Oak or oval wood stoves, as well as ranges, furnaces or other heaters of any description, and can be used in connection with anthracite or bituminous coal, coke, wood or any other fuel. The claim is made by the arrangement of the draft regulator in the bottom head, a large percentage of the heating power of the fuel can be utilized and held in check and the fuel be entirely consumed with a material gain in available heat in the room. Sprecher Bros. furnish these radiators with single or double cylinders, and with various styles of heads and bases.

Concerning Gasoline Stoves.

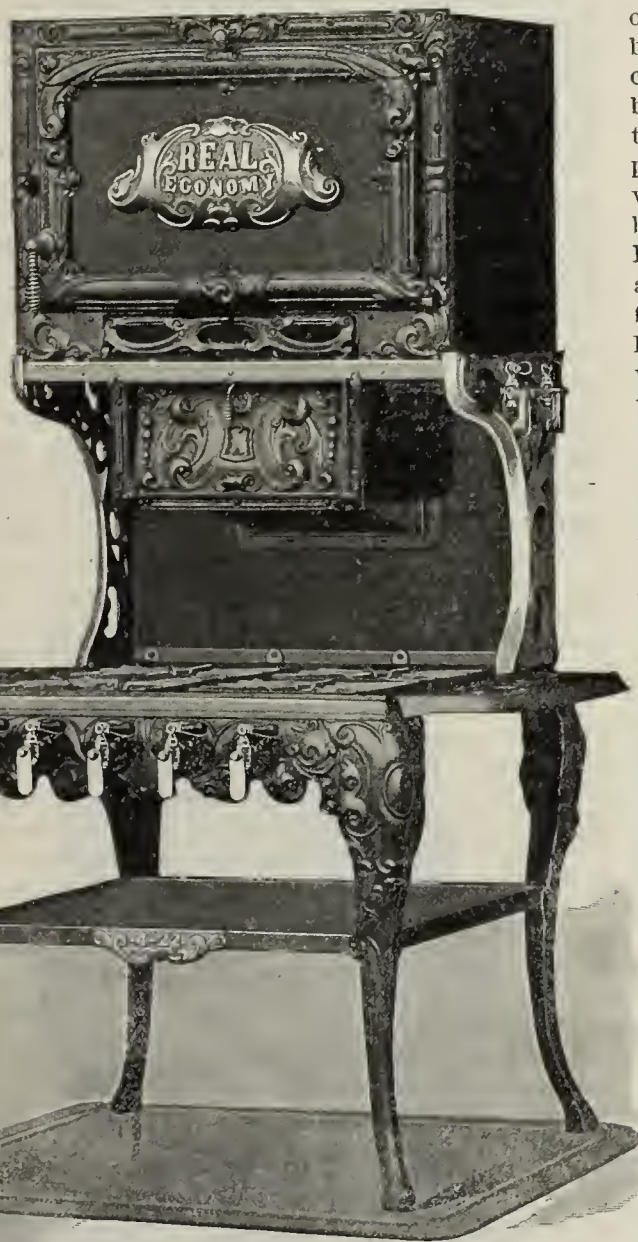
One of the leading manufacturers of gasoline stoves brings up some very interesting points in connection with the condition of the gasoline stove trade. Gasoline as a fuel, he claims, is getting scarce, and the hope for extending the supply is small. The uses for gasoline have been enlarged very materially of recent years, and the demand for its use in operating engines, automobiles, boats, &c., coupled with the requirements of the numerous makes of stoves, seems to indicate that the fuel will be more expensive.

In the gasoline stove line, as in others, the popular idea seems to be to get a cheap article, disregarding the fact that a stove burning gasoline has to stand very severe usage, and unless constructed of the best grade of materials its lasting qualities are sacrificed. It is cited

as a strange circumstance that a great many of the up to date dealers will stock up with a cheap line of these goods, on which there is an extremely small margin of profit, whereas the standard makes of goods, which will outwear the others and give general satisfaction and will net the dealer many per cent. more profit, do not find a place in his stock.

The Real Economy Gas Range.

One of the recent additions which have been made to their line of gas ranges by the Economy Stove & Mfg. Company, 23-27 Brush street, Detroit, Mich., is known as the Real Economy, a general view of which is presented herewith. These ranges are made for both artificial and



The Real Economy Gas Range.

natural gas; those using the latter fuel being fitted with closed tops and heat covers and having an independent vent for each burner. Special attention is called by the manufacturers to the fact that this gas range has an elevated oven and broiler and a visible oven fire, emphasis also being laid upon the fact that the range can be operated from a standing position, thus avoiding the necessity of stooping. The oven is lined with asbestos and fitted in the bottom are removable polished cast iron cake griddles, which are referred to as being rapid and economical bakers. The burners have drilled perforations and are removable for cleaning. Each range also has one giant burner and one simmering burner in addition to the regular burners. All are removable for cleaning and all mixers are adjustable. The broiler is located at a convenient height and is heated with the regular oven burners, both oven and broiler being removable. The range can be furnished with either lever or needle valve, and all the burners are visible from a standing position. The illustration which we present herewith represents

the four-burner plain range and, with main top including end shelves, measuring 28 x 40 inches. The height of the main top from the floor is 27 inches and the height of the oven shelf from the floor is 44 inches. The body of the stove is attractively enameled, thus rendering it rust proof and at the same time easy to clean.

Marriage of Edwin S. Barbour.

The Fort Street Presbyterian Church of Detroit, Mich., was the scene, on Tuesday, October 15, of the marriage of Edith Henry, the only daughter of A. M. Henry, to Edwin Scott Barbour, son of George H. Barbour, vice-president and general manager of the Michigan Stove Company. Mr. Barbour, Jr., is a director of the company and also the purchasing agent. The wedding was of more than ordinary interest, owing to the social prominence of both the bride and bridegroom, and the ceremony was witnessed by a large congregation. The marriage was performed by the bride's uncle, the Rev. Dr. James Buckley of Morristown, N. J., assisted by the Rev. Edward H. Pence, pastor of the church. The decorations of the church were particularly beautiful, being of autumn leaves and branches arranged in front of the galleries and altar. Back of the autumn boughs in front of the pulpit was a bank of palms, with three marriage bells in white flowers. The bride and groom left for the Berkshire Hills in the private car of President Ledyard. They will also visit other points of interest, returning to Detroit early next month.

The Satisfaction Steel Range.

The Michigan Stove Company, since the issuance of their last catalogue and price book, have completed patterns for the Satisfaction steel range, designed to be sold at a popular price. A handsomely illustrated circular describing this range has just been received. It is of full sized cabinet construction, has a square steel oven with the bottom braced to prevent warping, a heavy duplex grate, heavy sectional cast linings which fit all sizes, steel oven door which is counterbalanced, the oven top protected with a cast iron plate, front feed or broiler door, front draft, ventilated oven, extension fire box for wood, effective ash guards, steel ash pan, large flue cleaning door and end shelf on the square range. The inside of all flues is aluminized, which prevents their rusting. The oven racks, the back of the oven, the inside of the oven door, the fire door, the ash pit and oven doors and the front damper are also aluminized. The range is furnished with a very attractive high shelf and high closet, having aluminized trimmings and a revolving sheet steel door. In constructing this range, the manufacturers have made the wearing parts exceptionally durable and have also designed the range as to make it an easy construction to handle. It is further designed to be economical in the use of fuel. By means of the new portable reservoir, which fits all sizes, a range can be changed in a moment into a square and reservoir stove. The reservoir has flush top, is made of galvanized iron and is aluminized inside and out, with japanned cast iron covers.

Stove Dealers' Supply Catalogue.

Kramer Brothers, proprietors of the Dayton Stove Repair Works, Dayton, Ohio, issue a 52-page catalogue devoted to the hardware specialties, stoves and stove repairs which they manufacture and to a variety of supplies for the stove dealer, which they also handle. The first pages of the catalogue show two styles of sheet iron, coal and wood air tight stoves and two styles of cast iron globe cylinder stoves, adapted for school houses, halls and factories. The firm's line of specialties includes street manholes, sewer basins, street gutters, crossing plates, bell traps, cistern covers, furnace door frames, stove pipe dampers, drum feet and stove pipe shelves. They also make cast iron flower vases, lawn settees and fence ratchets. The concern are manufacturers of the Diamond extension stove backs, suitable for use in all kinds of cooking stoves, and an adjustable stove pipe thimble, which protects wood work when stove

pipes pass through floors. They also make two lines of revolving chimney tops, for which they furnish the fittings and give diagrams for cutting the sheet iron work. Their line includes gasoline stove repair burners of different styles, gasoline torches, covers for gasoline stoves and cover plates, tinnerns' snips, socket wrenches, stove clamps, breast drills, stove carriers and trucks, coal hods, stove beards, stove pipe and elbows, fire shovels, poker, shakers and cover lifters, which are carried along with a variety of stove knobs, hinge pins, turn keys, stove bolts, stove putty and furnace cement, stove polish, stove urns, mallets and brushes. A variety of adjustable grates, covers, dampers, cross pieces and centers complete the book. The adjustable grates are so constructed that they can be fitted to many different sizes of stove and range fire boxes.

THE GAS, GASOLINE AND OIL STOVE TRADE.

The manufacturers of gas, gasoline and oil stoves have hardly gotten through with winding up the business of the summer season, yet they are now busily engaged in getting their lines in condition for the next campaign. There seems to be no exception to the general conclusion that the trade of the past season has been very good, and although it is early to correctly read the future the opinion is freely expressed that promises for a good trade are very bright. Equally strong is the idea that the market will be firm and that an advance in prices is a reasonable expectation. To justify such a step there is a general report, not only of substantial improvements in old goods, but of many new goods being brought out by different houses and of the extension of lines that are already popular.

GAS STOVES.

In this branch of trade there is evidence that there has been some reduction in prices beyond what is considered advisable, and the opinion is quite generally manifest, not only that there should be an advance in prices, but that there will be. One manufacturer points out that the trouble with the gas stove business is that there is absolutely no agreement among manufacturers, and that some manufacturers are weak in maintaining their prices. Because orders do not come in during the winter months they become afraid of being left with more stock on their hands than they desire to carry, and cut their prices in order to dispose of their output. This year has shown that many orders were booked at cut prices during the winter months by manufacturers who learned, as spring opened, that the orders which flooded them could readily have been obtained at a better margin of profit. They were forcibly reminded through the season that the very meager profits secured in consequence of their early scare were not only a disadvantage to themselves, but to their *confrères* in the business.

Labor of all kinds, it is pointed out, is scarce, and from the small boy to the expert mechanic wages have been materially advanced. With these facts before them it would seem that the gas stove manufacturers should be about ready to meet and discuss questions of so much importance to them, with a view to reaching an agreement in regard to the marketing of their product. Some gas range manufacturers hold to the opinion that the methods followed by the vapor stove manufacturers might be adopted in the gas stove trade with advantage, and that thereby a steady market might be maintained at a profitable selling price. This action, it is believed, would meet with no serious objection by those who do the work of distributing the goods. Some difficulty, however, might be met with in reaching this conclusion, inasmuch as the retail stove dealer does not effect the final disposition of this class of goods, for the gas companies throughout the country have been large purchasers of these stoves and their method of selling at practically cost price to the retail dealer has seriously crippled a very valuable medium for the introduction and sale of gas goods. The report is quite general of difficulty in securing planished iron and sheets for manufacturing these goods.

Improvements in the construction of burners and of

stoves is a marked feature of the outlook as well as a declaration of intentions to bring out new and desirable patterns of gas ranges and other lines of gas goods. "The prospects for new business have never been better," is the expression of one manufacturer, and this statement measurably reflects the opinion of many others. It is further stated that prices are fair, although hot competition has materially cut down profits. The gas stove trade of the present year is looked upon in a general way as fairly satisfactory, when taken in comparison with that of other years. There seems to be evidence that each year the gas stove business has a tendency to open earlier and extend over a longer period, all of which is very gratifying to the trade.

GASOLINE STOVES.

For many years the gasoline stove has been a large factor in the consumption of the gasoline produced, and it is pointed out by some that the advent of the gasoline motor and the scarcity of the supply may have some effect on the price of this fuel. This, however, is not looked upon as likely to have any serious influence on the sale of gasoline stoves. The high temperature attainable with gasoline burners and the fact that the operation of the stoves is now so widely understood as to give them an established popularity, together with the perfection obtained in the construction of the burners, valves and every part promises well for the coming season's business. Nevertheless, it is reported by some manufacturers that new and valuable improvements, suggested by the experience of last year, will be embodied in new constructions, and manufacturers are vying with each other to put on the market more attractive goods than ever before. Reports from various sources for the current season disclose a very satisfactory increase in the general demand for gasoline stoves and there is a growing feeling of confidence that the coming year will be a very profitable one. Although this sentiment is quite general, it is, however, too early as yet to give anything like a conclusive opinion on this head.

Evidently the cabinet style of stove continues in popularity, as new lines of these goods are to be put on the market. Complaints are quite general with reference to the impossibility of securing some material, more especially sheet steel and pipe, within a reasonable time, and it is possible that sales have been curtailed owing to this fact. It is probable, however, that this may have been a factor of strength in the market. Owing to the higher price of many materials and labor employed in the construction of these goods, the probability of an advance in prices is very strong. Some houses go so far as to say that their plans are fully formulated and that there will be a slight advance in the list prices of gasoline goods to compensate for the advance in the cost of production. Conservatism and competition, however, evidently will have an effect on the proposed advance, as it is understood that the advance will be by no means commensurate with the increase in the cost of the goods. In the opinion of one prominent manufacturer in this field the prospect for the coming year's business is far better than it has been for the past two years, and there will be more activity in the industry than there has been for some time.

OIL STOVES.

In connection with the oil stove trade the fact is brought out that oil producers are vigorously pushing the sale of all oil consuming goods, owing to the fact that the demand for gasoline bears an excessive proportion to the natural production of gasoline and coal oil. The manufacturers seem to be working in harmony with this effort, and new oil stoves are to be brought out by a number of different houses. During the past year the wickless blue flame oil stove of the newer construction, equipped with what is known as the student lamp tank, has demonstrated a high efficiency, and it is probable that this style will be favored in many of the new lines of cooking apparatus. This type of construction has also won favor in connection with oil heating stoves, and new patterns of this type of stove are also to be added to the constructions to be brought to the attention of the trade by the different manufacturers. Apparently, the oil stove trade is divided into two classes,

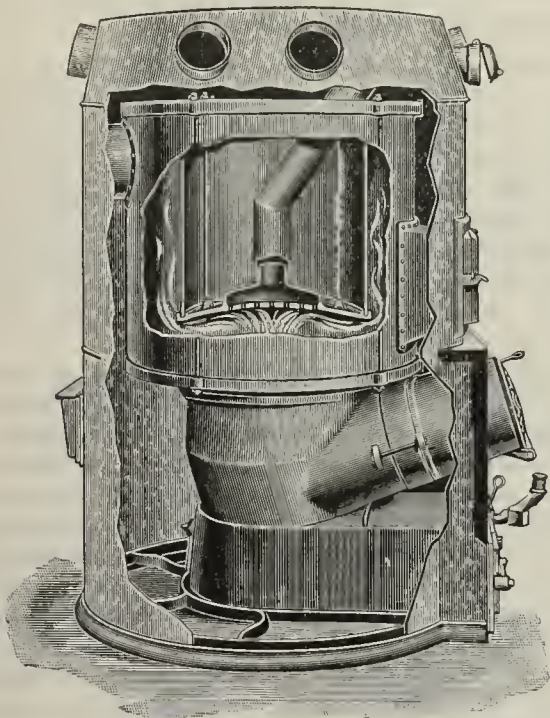
characterized by some manufacturers as cheap stoves and high grade goods. Evidence of competition in these goods is not wanting, and it is probable that while the past season is reported as having been a very good one, the profits were not as large as they would have been had competition been less sharp.

In this line of goods the prospect for the future is said to be excellent, and the trade is not confined to the United States. It is claimed that quite a considerable foreign demand for oil stoves has been created, with a promise of substantial increase, if it is given the consideration which it merits. Some difficulty has been experienced in securing material used in the construction of oil stoves, and the impression is quite general that prices will be slightly advanced, probably sufficiently so to cover the increased cost of labor and materials. Others, however, are of the opinion that the market will hold firm at the present level. The prevalence of these views is an indication that buyers may have to pay higher prices to secure their needed stock. These conclusions reflect a very satisfactory condition in this line of trade, particularly to the manufacturer, and it is doubtful if the dealers, when thoroughly conversant with them, will raise any material objection.

It is worthy of note that, so far as gasoline and oil stoves are concerned, the distribution is left to the regular stove dealer, and there is no competition, as in the gas stove trade, to market these goods practically at cost and thus interfere with the regular trade.

The Hustler Furnace.

In the accompanying illustrations we show the Hustler hot air furnace, made by the Patric Furnace Company, Springfield, Ohio, which is especially designed for burn-



The Hustler Furnace.—Fig. 1.—Broken View, Showing Construction.

ing soft coal. Fig. 1 presents a broken view, from which the construction and operation may be understood. The furnace consists of the usual ash pit section, on which rests a special form of fire pot, to the front of which is attached a soft coal feed and coking magazine, shown in Fig. 2. Above this is the combustion chamber and radiator, arranged to present a large heating surface for the air passing through the furnace, and constructed with a special hot blast chamber. A top view of this chamber is presented in Fig. 3, and a bottom view in Fig. 4. As will be seen from the broken view in Fig. 1, the pipe A extends up from the air heating chamber and through the furnace casing, arranged for an inflow of air to be heated before it is discharged through the perforations in the plate, shown in Fig. 4. By this means air of a high temperature is brought in contact with the products of combustion which rise from the soft coal.

These products of combustion, being heavily laden with free carbon, ignite on being mixed with the air and are consumed, avoiding the dense smoke that is produced in the ordinary form of soft coal furnace. It is pointed out that this not only effects an economy of fuel, but greatly increases the heating capacity of the furnace.

Another convenient feature is the soft coal feed and coking magazine. Extending through the front of the furnace from the fire pot is a chute with a drop door

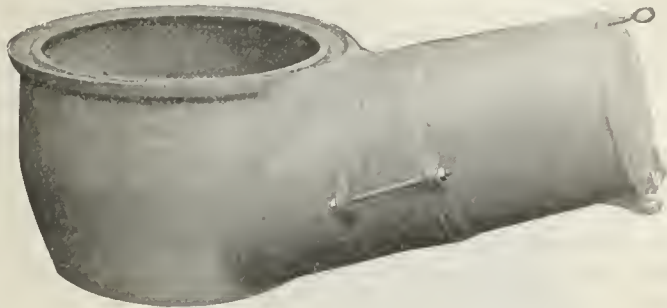


Fig. 2.—Fire Pot and Coking Chamber.

having strong, heavy hinges. This is designed to be filled with soft coal. As the fire burns the gases are liberated from this fuel, which is coked by the process, while the gases produce heat by being consumed. This enables the fire to be kept much longer with soft coal than is the case with furnaces of the ordinary construction. In addition to the hot blast, by operating a thumb screw attached to the door of the coking chamber air can be admitted through it to aid the burning of the gas, and when the coke has been formed it can be pushed in on the grate to be burned, and the chamber charged with a fresh supply of fuel.

Another important feature of the furnace is the method of making gas tight connection between the



Fig. 3.—Top View.



Fig. 4.—Under Side.

Hot Blast Chamber.

castings and the steel plate forming the radiator. The radiator heads are made with double flanges, so that the steel shells fit between and when filled with asbestos cement this is said to make a permanent gas tight joint. The castings are made heavy so that they can be drawn tightly together by means of suitable rods. The furnaces are made in five different sizes, rated to heat from three to four rooms in the small size, to 10 to 14 rooms, or 90,000 cubic feet of space, in the large size.

FURTHER particulars concerning the new buildings to be erected by the Kalamazoo Stove Company of Kalamazoo, Mich., are to the effect that the walls will be entirely of concrete, the details having been worked out by the officials of the company. There will be a main structure 350 feet long by 120 feet deep, of which 200 feet will be two stories in height and 150 feet one-story in height, the latter being used for the molding room. There will be a separate power house, 42 x 62 feet, and all machinery will be operated by means of electric motors. The equipment will be modern in every respect, and the company expect to have everything in running order shortly after January 1. We understand that they will make a specialty of Sheet Steel Ranges and Cook Stoves, as well as Oak Stoves. The management of the company is vested in Edward Woodbury, president; William Thompson, vice-president and general manager; Charles E. Dewing, treasurer, and A. H. Dane, secretary.

ODD PLATES.

THE UTICA HEATER COMPANY of Utica, N. Y., are distributing the last speech of William McKinley, bound in a brown paper cover, with a portrait of the late President on the first page. The souvenir is not confined to those who use the Utica Superior Furnaces, but is also being sent to many in the heating trade.

STOVE DEALERS will be interested in the 18-page catalogue issued by W. H. Colebrook & Sons Company, Syracuse, N. Y. The first pages are devoted to the Crown Asbestos Cement for stoves, furnaces and ranges, followed by a variety of all styles of Cement suitable for linings of fire chambers of stoves, and for making tight joints between the different parts of a stove. The Black Flag Crown Paste and Stove Polish are made for using with either water or benzine, and convenient for household as well as for shop use. Stove Putty, Pump Valves, Hose Washers, Asphaltum Varnish, Roof Paint, Glue and Ebony Enamel are other articles enumerated in the catalogue.

E. F. KURTZ, 41-43 North Second street, Philadelphia, Pa., is sending to the trade a neat folder printed in dark blue, giving a list of the Stove Repairs from original patterns that are carried by him in stock, ready for prompt shipment. The second page of the folder gives an extensive variety of supplies for stove men, including everything from Stove Putty and Stove Polish to Pipe Collars, Fire Clay, Pokers, Shovels, Coal Hods and Oil Stove Wicks.

THE AMERICAN FURNACE COMPANY, St. Louis, Mo., makers of the American Steel Furnaces, are compelled to run their foundry and construction department night and day in order to supply the demand for their products. A card has recently been issued by this concern showing on one side a picture of Uncle Josh standing on a register enjoying a large volume of hot air, which has greatly disturbed the hang of his coat tails and whiskers, and has raised the hat from off his head. The card is headed "Have Your Chills Cured with the American Furnace." Other appropriate reading matter is printed on both sides. The purpose of the card is for distribution among dealers, space being left for their name.

THE COLE MFG. COMPANY, the original manufacturers of Cole's Air Tight Wood Heaters, Hot Blast Coal Heaters and Tank Heaters, are now building an additional fire proof warehouse at their works, which are located at 3218 to 3238 South Western avenue, Chicago. This warehouse will cover a ground space of 50 x 150 feet and will be three stories in height. The company are contemplating further enlargements of their facilities, which are overtaxed in endeavoring to meet the demands of their customers. They have an output of 600 Stoves per day, but this large product does not enable them to keep up with their orders. They are at present nearly 10,000 Stoves behind. The company are constantly at work on new ideas and intend to bring out a Range for the next season's trade which will have not only new features, but will embody radical changes in Range construction.

THE LENOX FURNACES, which are made in several sizes for hot air heating and for combination hot air and hot water heating, by the Lenox Machine Company, Marshalltown, Iowa, are described in a little folder, so as to bring out all of their points of practical utility. The Lenox Furnace is also made the subject of a 20-page pamphlet containing testimonials from persons who have used these heaters with satisfactory results. The list includes not only residences, but churches and a variety of public buildings.

THE A. & J. STOVE COMPANY, Gadsden, Ala., have just completed their foundry and expect to have it in operation in a very short time. We understand that the company will turn out eight sizes of Stoves intended for using wood as a fuel, eight sizes of Coal Heaters, three sizes of Club Grates, and three sizes of regular frame Grates, as well as all kinds of Hollow Ware.

"It's about time for you to fork over that Cement order," is the headline on a card that is being sent through the mails by W. H. Colebrook Sons & Co., Syracuse, N. Y. Attached to the card and giving point to the

remark above quoted is a small tin fork. The company claim to be the largest manufacturers of Asbestos Furnace Cement in the world. The Chas. Smith Company, 122 Lake street, Chicago, are their Western selling agents.

ORR, PAINTER & Co., the Sunshine Stove Shop, Reading, Pa., report a very large trade in Heaters and Steam and Hot Water goods. Oak Stoves are also coming in for a large share of trade and the general line of sales is said to be well above the average at this time last year. Trade conditions are decidedly better this year, and all departments of the plant are running on full time.

EDWARD J. ETTING, with offices in the Land Title Building, Philadelphia, and 39 Cortlandt street, New York, announces that he has been appointed agent for the S. Obermayer Company, and is prepared to furnish a complete line of supplies, Plumbago Facings, &c., required in foundries and shops. This arrangement, in connection with the cranes and equipment manufactured by the Whiting Foundry Equipment Company, will enable Mr. Etting to equip iron, steel and brass foundries complete.

THE MONCRIEF-CARTER FURNACE COMPANY, Atlanta, Ga., have recently enlarged their foundry, increasing its capacity 50 per cent. The increasing demand for their Furnaces has made this extension necessary. They have just completed a large heating plant for the opera house at Greenville, Texas, and are now putting a heating plant in the school building of the same town. The company have a contract for heating one or more large school buildings at Berkley, Va., and several contracts for churches and school buildings at Winston and other cities in North Carolina and in the State of Mississippi. The rule of the company is to personally supervise the installation of their Furnaces, as they consider this the most important element in securing the success of a heating plant.

The P. & S. S. League.

On Monday night, after the bowlers in the Plumbing and Steam Supply League, at the Monarch Alleys, Twenty-sixth street and Sixth avenue, New York, could see through the smoke of the battle, the team of Thomas G. Knight were seen as the winners of two victories, while the John A. Murray team suffered two defeats, and the Fred. Adece & Co. team split even.

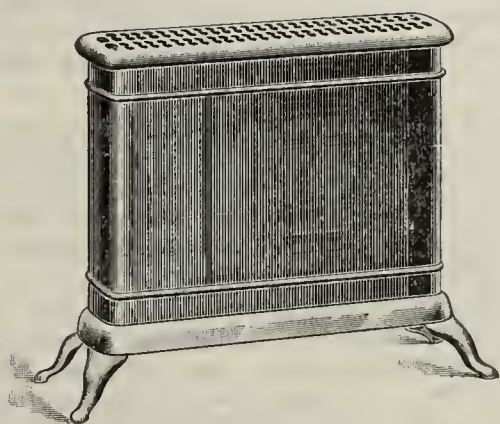
On Thursday night the individual records were again transferred. The team of Ronalds & Johnson Company, New York, were twice losers, while the teams of the Crane Company and Central Foundry each tasted victory and bitter defeat. A. E. Good of the Crane Company team scored 192, and repeated in 210, which gives him the honor of individual high score, surpassing the 198 of M. Behrer. He was closely followed by J. S. Dibley of the Central Foundry Company team, who scored 173 and repeated in 199. These high scores were made in the last contest of the evening, when Good and Dibley were contestants, as anchors of their respective teams.

THE GRAY HARDWARE & IMPLEMENT COMPANY, St. John, Kan., have been organized with a capital stock of \$10,000. They are successors to Gray & Co., dealers in Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods and Harness.

Bids will be opened on November 5 at the Navy Department in Washington for supplies for the Mare Island Navy Yard, at San Francisco, Cal. Among the materials required are the following: Two hundred pounds of copper rivets and burrs, 600 pounds of copper tacks, 75 pounds of copper washers, 50 dozen steel wire foundry casting brushes, 1000 pounds of brass rods, 305 sheets of braziers' copper, 19,500 pounds of flat bar iron, 13,000 feet of steam pipe, 2800 feet of seamless brass pipe, a variety of plumbers' supplies, unions, bushings, elbows, nipples, tees, 109 dozen brass globe valves, 700 sheets of galvanized steel and 16,000 pounds of sheet lead.

An Electric Air Heater.

Wherever incandescent electric lights are used for lighting offices or residences the Electric Air Heater, shown in the accompanying engraving, can be used. These heaters are made by the American Electrical Heater Company, 195 River street, Detroit, Mich., in a number of sizes from 12 to 20 inches in length, from 12 to 17 inches in height, and in two widths, 3 and 4½ inches. They are equipped to work under a voltage of 50 to 500 and to furnish from 750 to 6000 watts. Their heating capacity may be rated on the basis of from 2 to 3 watts for each cubic foot of space to be heated in well constructed buildings. The company inform us that these heaters are coming into very general use and that their sales thus far this season have been more than double their entire output for last year. The convenience of these heaters is readily seen when it is pointed out that they are light in weight and can be easily transferred from one apartment to another, it only being necessary to connect the incandescent light-



An Electric Air Heater.

ing wires with the heater, when heat is generated as soon as the connection is complete. It is also pointed out that as no combustion has taken place they give out no odors and do not vitiate the atmosphere. This little room heater is one of many domestic and industrial heating appliances made by this company, including soldering coppers, sad irons, cooking stoves, curling iron heaters, foot warmers, glue pots, solder pots and sealing wax heaters.

Bathroom Fixtures and Specialties.

Searls Mfg. Company, Newark, N. J., whose New York office is with Frederick Klages, Eastern and export manager, 127 Duane street, have added a number of new articles to their large assortment of bathroom and household specialties. Among them is a line of brass, bronze and nickel plated hat and coat hooks, with single, double, triple and quadruple hooks of solid metal. In this category also is a combination hat and coat hook for hall use, the extreme dimensions of which are 13½ x 26 inches, the latter being the width. The arms are all curved, the main or lower arms being of tubing ⅝ inch in diameter, while the lesser arms are solid and ¾ inch in diameter, there being a total of six arms for clothing, hats, &c. Another line consists of two holders for soda water bottles, both of which have four gracefully formed wires to clasp a bottle, with variation as to base. In addition to the goods mentioned there is a very complete assortment of combination fixtures for bathrooms in the way of holders for various articles, such as a tumbler, tooth brushes and soap, a portion of which are fitted with mug, brush holder and soap dish, all of china, while others are intended for combinations of china and glass, there being a total of 20 variations in the combinations. One of the later additions is a towel rack with glass bar, made both single and double, one of which with single glass bar has 2¼-inch glass balls at each end of the bar and is very artistically gotten up. In match safes there are two attractive styles for table use of heavy cast bronze metal, one of which is designed to hold a box of safety matches, the other having an orna-

mental receptacle for parlor matches; both have ash trays and are handsomely polished. These match safes are particularly suitable for libraries, hotels, cafés, clubs, &c.

The Boss Rotary Washing Machine.

The Boss Washing Machine Company, Cincinnati, Ohio, are offering the washing machine here shown. The

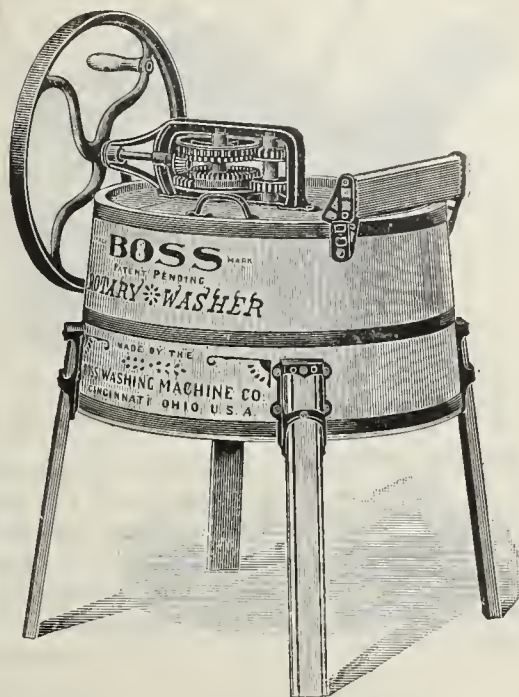


Fig. 1.—The Boss Rotary Washing Machine.

gearing is composed of four castings, all of which are intermeshed to insure immediate and concurrent action of all parts when one part moves. There is no lost motion, which, it is stated, is an important feature, as lost



Fig. 2.—The Boss Rotary Washing Machine Open.

motion is referred to as the principal cause of breakage in rotary washers. The cogs and all of the castings are extra heavy, it is explained; also that the weight of the castings and the simplicity of the mechanism overcome danger of breakage of any parts. In designing the machine it was the aim of the manufacturers to secure more than a full revolution to the pinwheel before reversing each time.

J. W. PUGH is successor to Rorem Bros., Jewell, Iowa, dealers in Shelf and Heavy Hardware, Stoves and Tinware. Mr. Pugh has enlarged the stock thus acquired.

Aluminum Tea Kettle, Pudding Pan, Etc.

Wagner Mfg. Company, Sidney, Ohio, for whom Neal & Brinker, 18 Warren street, New York, are the Eastern and export representatives, have recently put on the



Fig. 1.—Cast Aluminum Kettle with Self Raising Lid.

market several additions to their already extensive assortment of aluminum hollow ware and kitchen utensils, as here shown. Fig. 1 is a tea kettle, the lower part of which is a one-piece casting of pure aluminum; Fig. 2, representing the same utensil, but showing to better advantage the method of automatically raising the lid. On one side of the lid, which is also cast in one piece, is

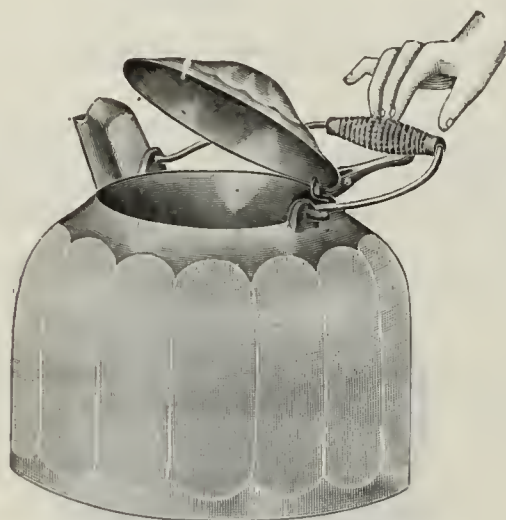


Fig. 2.—The Lid Automatically Raised.

an arm, projecting at such an angle that by a downward pressure of the wood handled bale it raises the lid for refilling the kettle at faucet or on the stove without danger of burning or scalding the hand. As aluminum absorbs heat rapidly these kettles are only made in flat bottom styles, in sizes 6, 7, 8 and 9. Fig. 3 represents a polished aluminum soap dish. Fig. 4 is an illustration of a pudding pan cast in one piece of aluminum.

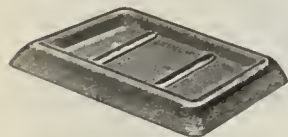


Fig. 3.—Polished Aluminum Soap Dish.

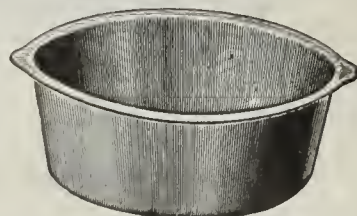


Fig. 4.—Cast Aluminum Lipped Pudding Pan.

This pan is made in both 4 and 7 pints capacity, and being much thicker than similar pans of stamped ware will not warp. Attention is drawn to the side lips as a convenience for lifting the pan.

F. C. HOFFMAN has recently embarked in the Shelf Hardware, Stove, Tinware, Farm Implement and Sporting Goods business in Mt. Zion, Ind.

Stove and Hardware Dealers.

THE Southern Hardware Jobbers' Association are inviting prize essays on trade mismanagement and its attendant consequences as viewed from the traveling man's standpoint, the competition opening October 1 and closing February 1, 1902. The prizes offered are \$50, \$25 and \$10. Any traveling salesman connected with any Southern jobbing house is eligible to enter this competition. The essays will be printed and numbered and sent out to the membership of the association, with the request that they vote on the same, the essay receiving the largest number of votes being adjudged the best, the author of which will be invited to attend the next meeting of the association and read his paper.

H. L. BLOOD & Co. have opened a store at 59 Central street, Leominster, Mass., with a full line of Stoves, Ranges and Hardware.

THE ALABAMA MFG. COMPANY, who are erecting an Iron Hollow Ware plant at North Birmingham, Ala., will manufacture all kinds of Kitchen Utensils, such as Pots, Pans, Griddles, Pokers, &c. The following comprise the company: Samuel E. Jones, Bolling Jones and John R. Diekey of Atlanta, Ga.

THE MARIETTA CASTING COMPANY, Marietta, Pa., are distributing a folder giving illustrations and prices of a variety of their Hollow Ware, including Maslin Kettles, Oval and Round Boilers, Deep Stew Pans, Saucepans, Scotch Bowls, Evaporating Dishes, Glue Pots, Yankee Bowls and Mortars and Pestles.

THE BROWN-HURLEY HARDWARE COMPANY have recently purchased the old established business of J. D. Seeberger, Des Moines, Iowa, and will add to their Shelf Hardware line a jobbing line of Stoves, Paints and Sporting Goods. They would like late catalogues and price-lists from all manufacturers of general Hardware and lines as specified above.

THE plant of the Moseley & Stoddard Mfg. Company, Rutland, Vt., manufacturers of Dairy and Creamery Goods, was destroyed by fire on the 5th inst. The company advise us that they will rebuild at once, and hope to have their new quarters completed by the first of the year.

FOREST CITY PAINT & VARNISH COMPANY, Cleveland, Ohio, are sending out with their compliments an attractive aluminum cigar ash receiver, which will doubtless be appreciated by their customers.

LOVELL MFG. COMPANY, Erie, Pa., issue a catalogue showing their extensive line of Wringers, as well as Mangles, Rat and Mouse Traps, &c. A separate pamphlet is issued which illustrates a line of Wringers made especially to meet the demand for low priced machines.

THE GAS TIP & SELF LIGHTER COMPANY, 298 Broadway, New York, are distributing circulars describing their Aluminum Gas Tips, Self Lighting Tips and Burners, &c.

W. H. H. THATCHER has moved his stock of Hardware, Agricultural Implements, Stoves, &c., from Wichita Falls, Texas, to Lawton, O. T.

G. A. BIGGS has lately engaged in business in Hobart, O. T., handling Shelf and Heavy Hardware, Stoves, Tinware, Farm Implements, Sporting Goods, &c.

M. H. COON, Clark's Green, Pa., has broken ground for an annex to his Hardware store. The annex will be 18 x 36 feet, two stories high. Mr. Coon's stock covers General Hardware, Stoves, Tinware, Agricultural Implements, &c.

BAKER & McCABE have succeeded Baker, Roth & Watson in the Hardware, Stove, Harness, Farm Implement and Sporting Goods business in Paekwood, Iowa.

ST. PAUL HARDWARE COMPANY, St. Paul, Minn., wholesale and retail dealers in Hardware, Cutlery, House Furnishings, &c., have disposed of their business to J. F. McGuire & Co.

L. K. JONES HARDWARE COMPANY have opened a new store in Hobart, O. T., handling a line embracing Hardware, Stoves, Tinware, Sporting Goods and Agricultural Implements.

STRAINED RELATIONS IN THE PLUMBING TRADE.

The provisions of the New York Conference Resolutions for arbitration and joint action in cases of disputes and infractions have been abrogated by the Executive Committee of the National Association of Master Plumbers, as is indicated, with the cause, in the following letter from President E. D. Hornbrook to Charles W. Woodward, secretary of the National Committee of the Confederated Supply Associations:

PRESIDENT'S OFFICE, KANSAS CITY, MO., }
September 20, 1901. }

Chas. W. Woodward, Secretary, National Committee of the Confederated Supply Associations, New York, N. Y.:

Dear Sir: After making several requests of you to carry out the provisions of the Revised New York Conference Resolutions, and to act on cases of violations of the said resolutions where your members had admitted the violations, I felt obliged to write you on August 31 that we must have a definite answer by September 10 as to what you proposed to do with the several cases referred to you prior to our national convention in June.

Last February complaints for violations of the New York Conference Resolutions by James B. Clow & Sons of Chicago were referred to you, and after considerable correspondence and urging on our part these complaints and later ones were submitted to the Joint Standing Committee on Conciliation. The said committee found Clow guilty, and their decision was sent to you on July 25. Having waited some time to hear from you on this case, I inquired what had been done, or what would be done, and you advised me on August 20 that Clow had positively refused to be governed by the findings of the Conciliation Committee. We, of course, expected that the joint resolutions would be carried out promptly, as you had previously advised me that Mr. Torrance and yourself had agreed on what action was necessary. On September 2 I asked you for a definite answer by September 10 as to whether you proposed to enforce the joint resolutions in the Clow case.

Your letter of September 9, in answer to my several letters, gives us no information as to what you propose to do, or any assurances as to when you will take action. It is simply delaying matters, which is very unsatisfactory to the members of our association, as well as to the loyal jobbers and manufacturers.

We have given the New York Conference Resolutions a trial of more than a year, and in every instance our Executive Committee have acted promptly and carried out our part of the agreement. We very much regret that the National Committee of the Confederated Supply Associations have not done so.

In view of this state of affairs, our Executive Committee have decided to abrogate the agreement heretofore existing, known as the Revised New York Conference Resolutions. I hereby officially notify you that on and after this date the National Association of Master Plumbers will no longer be bound by said agreement.

Yours very truly,

E. D. HORN BROOK, President.

The views of the National Committee of the Confederated Supply Associations on this action are presented in the following reply to the above letter:

SECRETARY'S OFFICE, NEW YORK, N. Y., }
October 3, 1901. }

E. D. Hornbrook, President, National Association of Master Plumbers, 1212 Main St., Kansas City, Mo.:

Dear Sir: At the meeting of the National Committee of the Confederated Supply Associations held at New York City on October 2, 1901, the following resolution was unanimously passed:

"That we do not admit the right of the National Association of Master Plumbers to abrogate the New York Conference Resolutions as per your official letter of September 20.

"That at their adoption the matter of conference upon all subjects pertaining thereto was an implied principle to be followed by both parties to the agreement.

"That we, as the National Executive Committee of the Confederated Supply Associations, reaffirm our adherence to the New York Conference Resolutions."

In addition to the above resolutions a Committee of Four was appointed to undertake to carry out the findings in the adjudicated cases which have come before the Joint Standing Committee on Conciliation.

Yours very respectfully,

C. W. WOODWARD, Secretary.

On receipt of the above letter the action taken in the original communication was confirmed at a meeting of

the Executive Committee of the National Association of Master Plumbers, and the following letter was sent to Secretary Woodward, notifying him of the same:

PRESIDENT'S OFFICE, KANSAS CITY, MO., }
October 14, 1901. }

Chas. W. Woodward, Secretary, National Committee of the Confederated Supply Associations, New York, N. Y.:

Dear Sir: I am in receipt of your letter of October 3, in which you quote a resolution adopted by the National Committee of the Confederated Supply Associations at their meeting in New York City on the 2d inst. Your letter was received just prior to my departure for Cleveland to attend a meeting of our Executive Committee, called for the purpose of considering plans for our future guidance.

At our meeting in Cleveland your letter of the 3d, as well as other letters, was read, and the Executive Committee unanimously reaffirmed their vote, taken by mail, repealing the New York Conference Resolutions. There was nothing else to be done, as you had failed to act on several admitted violations of the joint resolutions on the part of your members, as well as the case particularly mentioned in my letter of September 20.

In your letter of the 3d you state that you do not admit our right to abrogate the New York Conference Resolutions. There is nothing in the said resolutions as to how they shall be repealed. It was expected that they would be continued as long as they were mutually satisfactory, or until one party acted in bad faith. In view of the fact that your side have broken their part of the agreement, in failing to carry out the findings of the Joint Standing Committee on Conciliation, and declining to carry out the resolutions in three instances where your members persisted in violating the resolutions, I fail to see how one party to an agreement can be held and the other party allowed to violate or decline to observe the same.

At the meeting of the Executive Committee held in Cleveland on the 7th and 8th of this month new resolutions were adopted, which will be known as the Cleveland Resolutions. They embody the New York Conference Resolutions excepting the provisions for arbitration and joint action in cases of disputes and infractions. By conservative yet prompt and businesslike measures we expect to secure proper trade protection, which we regret we could not get under the New York Conference Resolutions owing to their not being enforced by your side.

Your very truly,

E. D. HORN BROOK, President.

The trade was then informed of the action taken by the following letter:

PRESIDENT'S OFFICE, KANSAS CITY, MO., }
October 17, 1901. }

To the Manufacturers and Jobbers of Plumbing Material:

Gentlemen: I herewith submit for your information a copy of my letter of September 20, 1901, addressed to the secretary of the National Committee of the Confederated Supply Associations, in which I gave notice of our refusal to be governed by the New York Conference Resolutions, for the reasons stated in my letters to Mr. Woodward. I also inclose you a copy of a letter received from Mr. Woodward on the subject, and my reply thereto; all of which are self explanatory.

I believe that all loyal manufacturers and jobbers will regret, as we do, the repeal of the joint resolutions, and will agree that it was the proper and only step we could take under the circumstances.

The Executive Committee of the National Association of Master Plumbers met in Cleveland, Ohio, on October 7 and 8, 1901, and adopted new resolutions for the protection of the plumbing trade. I inclose you a copy of the said resolutions. After a careful perusal you will observe that they are practically the New York Conference Resolutions, except there are no provisions for arbitration and joint action in cases of disputes and infractions.

We propose to be very conservative and just in all our acts, as the resolutions indicate, and in every case the rights of the manufacturers and jobbers, as well as the plumbers, will be protected.

As soon as possible a list of recognized master plumbers in localities where we have members will be published and furnished gratuitously to manufacturers and jobbers.

Yours very truly,

E. D. HORN BROOK, President.

The resolutions mentioned in the above letter are given below:

CLEVELAND RESOLUTIONS.

Unanimously adopted by the Executive Committee of the National Association of Master Plumbers at a meeting held in Cleveland, Ohio, on October 8, 1901:

Whereas, The members of the National Association of Master Plumbers of the United States desire more adequate trade protection from the manufacturers of and dealers in plumbing goods, and for the purposes have adopted the following resolutions:

1. The members of the National Association of Master Plumbers are requested to confine their purchases of plumbing goods to manufacturers and jobbers who are willing to assist in improving the condition of the plumbing business, and who sell plumbing goods in localities where there are members of the National Association of Master Plumbers only to recognized master plumbers whose names appear in the national directory of master plumbers, published under the supervision of the National Association of Master Plumbers.

No plumbing goods shall be furnished to consumers under any conditions.

All lists must be submitted to the officers of the various State associations and approved by them before being sent to the National Association.

When affiliated associations forward lists of recognized master plumbers to be published in the national directory, or when affiliated associations shall remove any names from either list, or request their removal, all the facts must be submitted to the president of the National Association, who may use his discretion as to whether the circumstances or facts warrant the publication of such lists or the removal of any names.

2. It shall be the duty of the secretary of each State or local association affiliated with the National Association to furnish a list of recognized master plumbers in his locality to the president of the National Association of Master Plumbers within 30 days after the publication of these resolutions, and thereafter advise the said president on the twenty-fifth day of each subsequent month of any changes in the said list.

Failure to furnish such lists of recognized master plumbers, and to make corrections promptly, will subject the association guilty of such negligence to the loss of benefits of membership in the National Association during the time of such dereliction of duty.

3. Manufacturers or jobbers who sell or exchange plumbing goods with other manufacturers or jobbers who furnish plumbing goods to those not on said list of recognized master plumbers shall not be considered in accord with these resolutions.

4. Copies of the lists of recognized master plumbers shall be furnished gratuitously to manufacturers and jobbers in accord with these resolutions, and each month, or more frequently if necessary, supplements to the general list shall be issued and likewise distributed.

5. The names of manufacturers and jobbers who are considered in accord with these resolutions shall be printed in pamphlet form, under the supervision of the National Association of Master Plumbers, and distributed to those who are members of the National Association of Master Plumbers, with the request that they bestow their patronage upon those whose names are upon the said list of manufacturers and jobbers.

Supplements to this list shall be issued monthly, or more frequently if necessary.

6. In order to aid in honest dealing and the payment of just debts, manufacturers and jobbers are requested not to furnish plumbing goods to any one for a building, or addition to a building, where a manufacturer or jobber in accord, or a member of the National Association of Master Plumbers, has not been paid in full what is justly due him for goods furnished for such building or for work performed upon such building.

Manufacturers or jobbers furnishing plumbing goods contrary to this section shall not be considered in accord with these resolutions.

7. Master plumbers shall not finish work or furnish plumbing goods for any building, or addition to any building, where a manufacturer or jobber in accord, or a member of the National Association of Master Plumbers, has not been paid in full what is justly due him for goods furnished for such building, or his work performed upon such building.

Master plumbers finishing work or furnishing goods for such buildings contrary to this section shall not be recognized as master plumbers.

8. To assist in carrying out the intent of sections 6 and 7, manufacturers, jobbers or master plumbers shall furnish the president of the National Association of Master Plumbers with complete information, evidence and sworn statements, showing that the building is in default to any manufacturer, jobber or master plumber.

The manufacturer, jobber or master plumber wishing to avail himself of the protection under sections 6 and 7 may also furnish proper information to those in his section who may be directly interested.

Failure to promptly furnish said notice shall forfeit the right to claim and receive protection under sections 6 and 7 of these resolutions.

When a building is thus in default and a notice has

been duly issued it is to be presumed that an early settlement will be reached, and in order that a wrong shall not be done any one, it shall be the duty of the one filing the notice to notify the president of the National Association of Master Plumbers every week after the filing of the notice that a settlement has, or has not, been reached. Failure to send this notice shall forfeit protection under sections 6 and 7 of these resolutions.

It shall be the duty of the president of the National Association of Master Plumbers to furnish manufacturers and jobbers in accord, and the secretaries of master plumbers' associations, with a memoranda of all buildings in their locality in default, as prescribed in sections 6 and 7, immediately upon receipt of proper evidence of the accuracy of the facts reported. Immediately upon the receipt of a notice of adjustment of any claim notice shall be sent to the same parties.

9. Master plumbers found guilty of violating health laws or ordinances regulating plumbing or plumbers shall not be recognized as master plumbers.

10. It is a recognized rule in all lines of business that manufacturers and jobbers confine themselves to manufacturing and wholesaling.

Manufacturers or jobbers who conduct a plumbing business directly or indirectly, or who establish and maintain others in the plumbing business, shall not be considered in accord with these resolutions.

11. Master plumbers selling plumbing goods that they do not install, or who install plumbing goods that they do not furnish, in localities where there are members of the National Association of Master Plumbers, shall not be recognized as master plumbers.

12. Manufacturers, jobbers or their representatives in plumbing goods who give net prices or any discounts from list prices to those who are not recognized as master plumbers by the National Association shall not be considered in accord with these resolutions.

13. Manufacturers or jobbers sending net prices to master plumbers without requests for same shall not be considered in accord with these resolutions.

14. Manufacturers, jobbers or their representatives who directly or indirectly estimate on any job or jobs, or who take off lists of fixtures from architects' plans, and disseminate such information among the plumbing fraternity, shall not be considered in accord with these resolutions.

15. Manufacturers or jobbers accepting a waiver from a master plumber, allowing them to sell plumbing goods direct to others than recognized master plumbers, shall not be considered in accord with these resolutions.

16. Master plumbers giving, or offering to give, waivers to manufacturers or jobbers, to sell to others than recognized plumbers, shall not be recognized as master plumbers.

17. Manufacturers or jobbers furnishing goods on owner's, agent's or contractor's guarantees will not be considered in accord with these resolutions.

18. *Plumbing Goods.*—Plumbing goods include all fixtures used in connection with plumbing work and connected with the water or sewer systems, including iron and brass pipe and fittings used in connection with plumbing work. Compression, Fuller and self closing work and other miscellaneous brass work, when used in connection with plumbing work, whether for iron, brass or lead pipe, is considered plumbing goods.

Exemptions.—Ground key work is exempt when used by water works companies and as wind mill supplies; also compression bibs when used as wind mill supplies. Pipe, fittings and boilers, when used for purposes outside of plumbing, are not classed as plumbing goods.

Water meters and filters are not generally considered plumbing goods, but affiliated associations may make local arrangements regarding water meters and filters in their sections.

Those who furnish plumbing goods to be used for purposes foreign to plumbing work do so at their own risk—that is, they must know that they are not to be used for plumbing work.

19. *Exemptions.*—Under the conditions hereinafter prescribed the sale of plumbing goods to the following will not be considered contrary to these resolutions:

The Federal Government for Federal buildings, if purchased by Federal officers for Federal work, it being their intention to employ journeymen to do the labor.

State or county authorities, only for repairs where such authorities continually employ a journeyman plumber.

Public school buildings are not considered State or county institutions.

Railroad companies, only for use in their cars, or for fitting up pumping stations or water tanks along their lines for the supply of water to locomotives, and for repairs (not alterations or new buildings) in their buildings where they continually employ a journeyman plumber.

Gas and water companies for pipe and fittings, only for work on their lines outside of the building or curb, as may be the custom of the companies to run them, and for repairs (not alterations or new buildings) in their own buildings where they continually employ a journeyman plumber.

Car and ship building companies, only for use in their cars or ships, but not for work in their buildings.

Under the foregoing exemptions plumbing goods shall not be furnished for the private use of officers or employees of the Federal Government, State or county authorities, railroad, gas, water, car or ship companies; nor to contractors who may have contracts or sub-contracts with the Federal Government, State or county authorities, railroad, gas, water, car or ship companies.

New York City Notes.

Manhattan Branch is making active preparations for its annual entertainment and reception, which will be given at the Lexington Avenue Opera House on December 18. The Committee of Arrangements consists of Milton Schnaier, B. F. Donohoe, T. J. McCormack, John Boyd, T. J. Cummins and E. J. Brady. It is intended to make it one of the most enjoyable entertainments ever given by the association.

* * *

Trade still continues good and every one busy. The trouble with the journeymen plumbers has quieted for the present and the demand for good men is still unabated. No new jobs of importance have been given out during the past week, but hurry orders on jobbing and overhauling still continue to come in.

* * *

Business with the Examining Board of Plumbers is not as lively as usual, probably owing to the fact that all the journeymen are working and are not just now aspiring to become masters.

* * *

With all the work now being done there is a general complaint of inability to get money when it is due. This complaint is universal among those plumbers doing jobbing and overhauling.

* * *

James Armstrong of 52 Dey street is about winding up his large contract on the Immigrant Station at Ellis Island.

Affiliated Range Boiler Manufacturers.

It looks as if the usefulness of the confederation of the various manufacturers' and jobbers' associations was about to be put to a test. Last week we mentioned the appeal made by the Brass Manufacturers' Association to the jobbing trade, asking for recognition and preference for its members when the jobbing houses are placing orders for this line of goods. This week the manufacturers of galvanized kitchen range boilers issued a circular letter bespeaking for the members of their association the support of the jobbing trade. They say that the manufacturers whose names are given below are those who are affiliated with the National Committee of the Confederated Supply Association, and who, therefore, do not sell their goods to any except manufacturers and dealers recognized by the National Committee:

L. O. Koven & Brother, Ronalds & Johnson Company, Wm. B. Scaife & Brother, John Trageser Steam Copper Works, and Iron Clad Mfg. Company, New York City.

L. Wolff Mfg. Company, Chicago.

Henry McShane Mfg. Company, Baltimore, Md.

Detroit Range Boiler Company, Detroit, Mich.

Riverside Boiler Works, Boston, Mass.

New Sanitary Ware Plant

The Universal Sanitary Mfg. Company are a new concern who have recently started in the business of manufacturing sanitary earthen ware and plumbers' specialties with a capital stock of \$100,000 at New Castle, Pa. The company have just advised the trade that their pottery is now in operation and that they will make a complete line of plain and embossed staple goods. They also say they are in a position to make any specialties the trade might require. The company claim to produce a

ware that is equal to any on the market and they fully guarantee everything they make. While it is a fact that this is a new concern, all of those in charge of the pottery are people of experience in the sanitary earthen ware business. No expense has been spared in the erecting of the plant, the object being to be in position to make goods of the very best quality.

Artistic Bathroom Fittings.

Silver & Co., Brooklyn, N. Y., have just issued an 88-page catalogue devoted to artistic bath room fittings. These goods are made of brass, finely nickel plated, the design and finish being a special feature. Several pages are devoted to different styles of flat toilet paper holders and roll paper holders. Another line of goods is nickel plated towel racks, some consisting of a nickel plated rod supported by brackets, while others have a series of hinged bars, capable of supporting a greater number of towels, and some are furnished with a glass shelf for holding brushes and equipped with tumbler holder and soap cups. Thermometers for bathroom use are succeeded by an extensive variety of soap holders made to hang on the wall, attached to brackets for fastening to the wall, with pillars for attachment to the marble slabs of lavatories, or with hooks for hanging over bathtub rims. An equally extensive variety of sponge racks is made to conform to the style of the soap cups, and some are offered in combination for holding both soap and sponges. Similar racks are made for holding combs and brushes. A number of pages are devoted to an extensive variety of tumbler holders and tooth brush racks, with powder holders, and china soap cups, tooth brush vases, drinking cups and shaving mugs. Safety match holders are another line of specialties made in great variety. Coat, hat and wardrobe hooks for bathroom use, with whisk holders and bathroom mirrors and baskets for soiled linen and towels occupy another section. The Brooklyn shower bath rings, for use in connection with bathtubs, and seats adjustable to any size of bathtub, are followed by Turko-Russian bath cabinets and the heaters for use in them. The last pages show automatic gas lighting burners, metal polish and display boards for showing the firm's specialties.

The Lead Water Pipes of St. Paul's Cathedral.

Some interesting work was recently carried out at St. Paul's Cathedral, in London, in taking down one of the huge leaden water pipes, repairing it, and replacing it in its former position. In connection with this subject the *Ironmonger* calls attention to the fact that there are no rain water pipes visible either outside or inside the cathedral, whereas at most other ecclesiastical edifices—Westminster Abbey, for instance—the down pipes are rather a prominent feature of the external structure. The reason of this is that when Wren designed his masterpiece, having a considerable area to cover, he availed himself wherever he could of hollow construction, partly to save the cost of solid masonry and partly to reduce the weight of the massive building. Consequently, instead of disfiguring the outside of his building with numbers of rain water pipes, he left in the outer walls shafts, usually 3 feet by 2 feet in sectional area, inside which the pipes in question are safely and secretly housed. These shafts are fitted throughout with step irons, so that the workmen can readily pass up and down and keep the pipes under constant inspection without once entering the interior of the cathedral. The pipes, as already mentioned, are of lead, and being 8 inches square with the sides 3-16 inch thick, the work of taking down and replacing an entire length from top to bottom is no trivial task. Not the least remarkable point about the matter is that the pipes are those originally fixed up by Wren, and it speaks well for the quality of the metal selected by him that they should have remained serviceable so long. The authorities have not been able to identify the source from which the lead was obtained, but it is undoubtedly English, and though very hard in appearance, it casts and rolls to perfection. Many tons of this lead pipe are used in and about the cathedral.

A Plumbers' Specialty Catalogue.

Catalogue A, issued by the Diamond Stamped Ware Company, Detroit, Mich., is devoted to brass and nickel plated specialties used in the equipment of modern plumbing fixtures. The first pages show flush and supply pipes for high and low closet tanks, with and without compression stops, followed by pipe straps and adjustable pipe holders suited to these pipes. Another section of the catalogue is occupied by lavatory supply pipes with air chambers and with compression stops, supply pipes for bathtubs, lavatory traps, both with and without vents, of various styles, and plugs and washers for connecting both overflow pipes and lavatory waste and overflow pipes. Escutcheons for making a finish around nickel plated pipes, water closet seat hinges in a variety of styles and flush tank brackets form another section of the catalogue. Float balls for use in connection with ball cocks are shown in both smooth and corrugated form, and also in special shapes suited for special work. A variety of lavatory legs are presented, followed by trap covers, chain pulls and handles, patent overflow basin plugs, slip joints, chain stays, sink and overflow strainers, waste tubes, cock spouts, towel racks, soap cups, couplings, nuts and union basin wastes. A variety of nickel plated parts, washers, S hooks, friction rings, bumper plates and closet screw flanges take up a page, while another page shows a variety of soldering coppers, for both tinnern's and plumbers' use, including both swivel and seaming hatchets. The catalogue closes with a reference to the spun brass goods which the company are prepared to make to order.

Heating and Plumbing Notes.

THE CRANE COMPANY of Chicago, whose New York offices are at 490 Cherry street, recently secured a contract calling for the shipment of \$20,000 worth of Pipe, &c., for use in Russian Government mines in Siberia. The Pipe varies from 4 to 24 inches in diameter. The Crane Company are also turning out a \$10,000 lot of Piping, Valves, Fittings, &c., which will be installed in an electric plant at Lima, Peru.

THE MAKIN-KELSEY COMPANY, Philadelphia, Pa., have taken out city permits for the installation of hot water heating apparatus in the Club House at Tacomy, at a cost of about \$700. They will also install a similar plant at 604 Arch street, Philadelphia.

LEWIS CAMPBELL is building a new plumbing shop at Boyertown, Pa.

THE GLAUBER BRASS MFG. COMPANY, Cleveland, Ohio, report that business is very prosperous, and that they have been working overtime for 60 days with no immediate prospect of reducing the number of hours.

J. W. HUGHES, who is well known to the plumbers in the United States, with Sanitary Inspector Dore and Building Inspector Clausse form the Board of Examining Plumbers of Montreal, Canada.

GROUND was broken last week for the new factory building of the Louis Lipp Company, at Cincinnati, Ohio. The new plant will be located at Mitchell avenue and the Baltimore & Ohio tracks, and will be used for the manufacture of Plumbers' Supplies. The plant consists of two wings, each of which is 60 x 520 feet. In these two wings are nine different buildings, including foundry, enameling room, tin shops, machine shop, engine and boiler rooms, shipping department and offices. The buildings will be two stories high, and built of iron and brick at a cost of about \$75,000. It will be some months before the works will be ready for occupancy, but when they are completed the company will remove to them from their present quarters on Gest street.

THE Board of Fire Commissioners of Springfield, Mass., have awarded the contract for the heating plant of the Brightwood fire engine house to Whitecomb, Kirkham & Gray of Springfield.

THE municipal authorities of Madrid, Spain, have offered a prize of \$450 for the best model of a grating for draining openings in the street pavements, and another

of the same amount for a filter for water pipes, which must have a capacity to filter 211 gallons of water per hour. Models and descriptions must be submitted before the end of November. As the competition is not restricted to natives of Spain, American manufacturers may find it profitable to submit models and bids for supplying these requirements.

R. E. FOGWELL, Fall River, Mass., has the plumbing and hot water heating for a residence at South Somerset for Frank C. Chace.

S. F. GIBSON, Norwich, Conn., is installing a new heating system for C. E. Smith, using a Richardson & Boynton Company's furnace. He is also placing a furnace for John Donovan.

J. WARREN LAMB of Cooperstown, N. Y., bid \$1682 and secured the contract for heating the school building at Middleburg, N. Y.

THE NEW BRITAIN STEAM HEATING COMPANY, New Britain, Conn., have been awarded the contract for equipping the railway station at Worcester, Mass., with a heating system.

FRED. STOYLE of Houghton, Mich., has been awarded the contract for plumbing the new Citizens' National Bank Building in that city.

THE Board of Education of Philadelphia will receive bids until October 29 for heating and ventilating the annex to the boys' school, at Fifteenth and Green streets.

THE Board of Education of New Haven, Conn., will receive bids until November 1 for heating and ventilating the new High School.

THE CITY COUNCIL of Circleville, Ohio, have granted a franchise to a company to construct and operate a hot water system from street mains for heating dwellings and public buildings.

THE COLWELL LEAD COMPANY, 63 Centre street, New York, have just issued a yellow folder printed in two colors, giving the weight per foot of different gauges of Lead Pipe, Tubing, Waste Pipe and extra thick Pipe and Sheet Lead. The weights of pure Block Tin Pipe and Tubing are also given, as well as similar information on Wrought Iron Pipe.

IN the last issue of *Shop Talk*, published by Hill, Clarke & Co. of Chicago, the marvelous Bath Combination Grinder is illustrated and described. It is a machine in which manufacturers of plumbers' brass work will find interest, owing to the great variety of work which it is capable of doing with accuracy and speed.

M. F. DUFFY has been awarded by the Board of Safety of Louisville, Ky., the contract for placing new bathtubs and plumbing in the City Hospital at a cost of \$3745.

SEALED PROPOSALS for the heating and ventilating apparatus for the new High School building on York square, New Haven, Conn., will be received at the office of the Board of Education, 21 Centre street, that city, until Friday, November 1, 1901, at 8 p.m.

D. M. NESBIT of the firm of Ashwell & Nesbitt, Limited, 12 Great James street, London, arrived in this country last week and is visiting friends in the heating trade. Mr. Nesbit has made a number of visits to the United States, where he has made many friends. He takes a keen interest in American systems of heating and ventilation, and American engineers who have visited London speak highly of the extensive work which his firm have done in England.

THE CHADBOURN MFG. COMPANY, Newburg, N. Y., are sending to the trade an attractive pamphlet devoted to their system of automatic ventilating and temperature regulation, which was used on one of the conservatories at the Pan-American Exposition. It contains many testimonials from those who have used their apparatus, in addition to an explanation of the system. Accompanying the pamphlet are circulars showing a view in a greenhouse where the ventilators are operated by their system and giving the names of a large number of greenhouse men who are using it. C. W. Ward of Queens, L. I., is using the system in 43 greenhouses. Another leaflet shows the company's thermostat and also the

valve used in automatically regulating the supply of steam to a radiator. This system is used in a large clothing factory, which is heated and ventilated by an indirect blower system, where it not only governs the use of live and exhaust steam of the main stack heater, but also controls the speed of the engine which operates the blower and effects a direct saving of fuel.

THE DAVIS ACETYLENE COMPANY, 46 South Clinton street, Chicago, Ill., are using an eight-page folder, printed in two colors, to draw the attention of the trade to the Davis Carbide Feed Acetylene Gas plant. This Generator is so constructed that a quantity of fine carbide is charged in a receptacle, from which it is automatically fed to the generating chamber as the gasometer rises and falls, according to the consumption of gas in the lighting system.

THE contract for plumbing the Carnegie Library at Portland, Ind., has been awarded to the Fulton Hardware Company of that town.

QUARTERMASTER A. A. MAYBACH, Fort Terry, N. Y., will receive until November 19 bids for heating and plumbing a barrack building at that place.

THE Board of Directors of the Allegheny Heating Company, Pittsburgh, Pa., one of the constituent corporations of the Philadelphia Company, met October 17 and elected the following officers for the ensuing year: President, James H. Reed; vice-president and general manager, Joseph F. Guffey; secretary, W. B. Carson; treasurer, C. J. Braun, Jr.; auditor and general contracting agent, F. D. Nobbs.

New Firms and Changes.

DRISLANE, MCAULIFFE & GOLDSMITH, are a new firm in the plumbing business at Bellows Falls, Vt.

THE AMERICAN HEATING COMPANY have been incorporated at Kittery, Maine, with a capital of \$1,000,000, of which nothing is paid in, for the purpose of dealing in Stoves, Ranges, and Cremating Devices. The president is Horace Mitchell of Kittery, and the treasurer A. M. Meloon.

THE GILLETTE LIGHTING COMPANY, Chicago, Ill., have been incorporated with a capital stock of \$50,000 by Charles Randolph, John M. Kleppinger and Edward Cahn, for the purpose of manufacturing illuminating and heating devices.

THE FORT PITT MALLEABLE GRAY IRON COMPANY have been incorporated at Pittsburgh, Pa., with a capital stock of \$100,000, by John C. Reilly, Eugene S. Reilly, F. J. Lanahan, John Murphy and Joseph A. Weldon. The new company will manufacture Fittings for the plumbing and steam trade and their works will be located on Penn avenue.

ARTHUR L. MILLER and William Pickard have purchased the plumbing, tin and hardware business of I. W. Miller, at 95 West Main street, Uniontown, Pa.

T. J. MURRAY of Herkimer, N. Y., has closed the plumbing establishment which he has conducted in that place for the past two years.

The first meeting of the Committee of Arrangements for the National Convention on Reciprocity, arranged by the National Association of Manufacturers of the United States, was held at Philadelphia on October 18. It was arranged at the meeting that the convention should open in Washington on November 18, to last three days. Among the manufacturers serving on the Committee of Arrangements were George H. Barbour of the Michigan Stove Company, Detroit; William H. Pfahler of the Abram Cox Stove Company, Philadelphia, and Francis J. Torrance of the Standard Sanitary Mfg. Company of Pittsburgh.

The use of fuel oil for the smelting of ores is a new departure that is being tried in California. Heretofore coke has been considered a necessity in smelting, but a small smelter has just been erected at San Diego to demonstrate the possibilities of oil for this purpose. Iron and copper ores are to be treated. The inventor of the fuel oil smelting process is said to have perfect confidence in its success.

ST. GEORGE'S EVENING TRADE SCHOOL.

The catalogue of the St. George's Evening Trade School of New York for the season 1901-1902 shows that this institution has firmly established itself as a useful agency for the improvement of the boys in that part of the city of New York in which it is located. The school was established in the fall of 1892 as an adjunct of St. George's Episcopal Church. Started on a modest scale in a tenement house on East Eleventh street, it has grown in the interval until it now occupies the whole of a five-story building at 505 East Sixteenth street.

The school opened for the winter season on September 15, and is in session every evening except Saturday and Sunday, from 7.30 to 9 p.m. The course closes the third week in May. A very thorough course of trade instruction is provided, under competent and practical teachers, the departments including wood working, mechanical and free hand drawing, plumbing, printing and manual training. About 250 boys are enrolled as students in the trade classes, as well as 75 younger boys, who are taught in the manual training department. The latter is designed to be a feeder to the regular trade classes. In the plumbing department plumbing, steam fitting and gas fitting are taught, the course covering three years, and leading up from elementary instruction in the use of tools, &c., to the practice of the higher branches of scientific plumbing. Lead burning instruction is given in the third year.

The members of the trade classes are required to take a course in mechanical drawing as an addition to their manual instruction. Theoretical instruction on the different trades is given by means of short talks by the superintendent, Arthur A. Hamerschlag, or the different instructors. Prizes and diplomas are awarded each year at the close of the season to the boys and graduates, and to those who come out at the head of their respective classes. The instruction is given free, the only condition being that the boys shall attend St. George's Sunday school.

The building occupied by the trade school is excellently adapted for the work, although the directors are already taxed for room to accommodate the number of boys who apply for enrollment in the classes, and nearly every class has a waiting list. It has a large assembly room on the ground floor. Above the assembly room is the carpentry department with an extension built on the outside containing toilet rooms. The next floor is divided between the printing and the manual training department. The front part of the fourth floor is given to the plumbing department, the rear half being occupied by the mechanical drawing classes. On the top floor the front is occupied by rooms for the janitor, and the rear has been divided into equal parts, one of which is utilized by the Graduates' or Mechanics' Society, while the other is used for the free hand drawing, wood burning and decorating classes. The building has been equipped with new and modern plumbing from top to bottom and is excellently heated and ventilated. Each night over 300 boys are to be found at work in the building. This season the pressure of application has obliged the directors to limit the attendance of the individual boys to two nights in the week. All the improvements in the new building have been paid for.

The curriculum this season has been improved and extended, and the school is now in a most flourishing condition. At the close of the last season 25 boys were graduated from the various departments, after a three years' course. Superintendent Hamerschlag reports that there is a constantly increasing demand for the graduates of the school among mechanics, builders and manufacturers, and to supply this demand the directors were compelled in a number of instances to recommend undergraduates who, on the whole, have done remarkably well.

THE ROBERT CAMPBELL HEATING COMPANY of New York City were recently incorporated, with a capital stock of \$10,000, for the purpose of manufacturing Heating Apparatus. The directors of the company are: Robert Campbell, John T. Booth and Louis V. Hulse, all of New York City.

The Greatest Exporting Nation.

The United States continues at the head of the list of the world's exporting nations. The comparative figures prepared each month by the Treasury Bureau of Statistics, exhibiting the imports and exports of each of the principal countries of the world and the average per month during a given period, show that the domestic exports from the United States are greater than those from any other country, and that the monthly average during the year 1901 has been higher than that of any other country. For the nine months ending with September, the value of our exports of domestic products was \$1,024,605,181, against \$1,018,845,768 from the United Kingdom, the next largest exporter of domestic products in the same period. While a comparison during the same period with Germany, France, Russia, the Netherlands and India, which follow in the order named in the magnitude of their exports, is impracticable because their fiscal years are not continuous with that of the United States, the totals of their exports during the latest available years show not only that the United States is clearly in the lead as an exporter, but that the growth in her exports has been more rapid than that of any other great exporting nation. In the calendar year 1900, for which the statistics of most exporting countries are now available, the figures for the United States were \$1,453,013,659 of exports of domestic products, against \$497,263,737 in 1875, an increase of nearly 200 per cent. during that period; while those of Germany in 1900 were \$1,050,611,000, and in 1875, \$607,096,000, an increase of 73 per cent., and those of the United Kingdom, in 1900, \$1,418,348,000, and in 1875, \$1,087,497,000, an increase of about 40 per cent.

The very latest available data for comparing the commerce of the United States with that of other countries, however, are furnished in a statement just prepared by the Treasury Bureau of Statistics, which shows the monthly exports of domestic merchandise from each of the principal countries of the world during that period of its fiscal year for which statistics are available. This shows that the monthly average for the United States is greater than that of any other country, and that the figures of 1901 show in the case of the United States a material increase over those of 1900, while those of the United Kingdom and Germany show a decrease. The average monthly exportation of domestic merchandise from the United States in the nine months ending with September, 1901, was \$113,935,020, against \$112,529,440 in the corresponding months of last year, an increase of about \$1,500,000 per month; while those of the United Kingdom were in the same months of 1901, \$113,205,085, against \$118,132,533 in the same months of 1900, showing a decrease of about \$5,000,000 per month; and those of Germany were \$87,831,833 per month for the six months ending with June, 1901, against \$88,520,833 for the corresponding months of the preceding year, showing a decrease of a little less than \$1,000,000 per month.

The Production of Zinc in 1900.

The United States Geological Survey have issued in pamphlet form the annual report, by Charles Kirchhoff, of the production of zinc in the United States in 1900, which shows that during the past year the production of spelter in this country receded from the high point which it reached in 1899. The year 1900 was one of restricted consumption, the galvanizing trade in particular having suffered largely owing to strikes. The total production of spelter in the United States for the year 1900 is placed at 123,886 short tons, as compared with 129,051 short tons in 1899. Of this amount 8259 tons were produced in the Eastern and Southern States, 38,750 tons in Illinois, 62,136 tons in Kansas and 14,741 tons in Missouri. The figures show that the production in Illinois declined one-half during the second half of 1900, which was due mainly to strikes. Kansas gained rapidly, and the center of production for spelter has shifted to the gas belt of that State. Production in the Eastern and Southern States declined. The energetic develop-

ment of the mining and concentrating operations of the New Jersey Zinc Company and the building of a large new reduction plant promise, however, a considerable increase from that quarter in the future.

A number of Western producers increased their capacity during the year, especially in the Kansas district. In the early part of the year the American Sheet Steel Company assumed control of the Girard Works, at Girard, Kan. Since the American Steel & Wire Company, another of the constituent companies of the United States Steel Corporation, own the works of the Edgar Zinc Company, at Cherryvale, Kan., and at Carondelet, near St. Louis, the steel corporation is the second largest producer of spelter in the country, the Lanyon Spelter Company being the largest. In 1900 the plants controlled by the United States Steel Corporation made nearly 25,000 short tons of spelter, or one-fifth of the total output of the country. The corporation do nearly all the galvanizing of staple iron products in the country, and are therefore very large consumers of spelter.

The production of sheet zinc absorbs a large share of the output of the Illinois smelters, the quantity being about 18,000 to 20,000 short tons per annum. The capacity for the production of sheet zinc will be considerably enlarged. The New Jersey Zinc Company are building a rolling mill, and the Lanyon Zinc Company have broken ground for a plant at La Harpe, Kan.

In 1900 the United States, for the first time, became a really important contributor to the world's markets of zinc as an exporter of both metal and ore, sending out 22,000 short tons. Adding together these exports with the 18,000 to 20,000 tons used in the production of sheet zinc, and the 25,000 tons produced and consumed by the United States Steel Corporation, there are thus accounted for 65,000 to 67,000 short tons out of a total production of 124,000 short tons, or more than one-half. The additional purchases of the steel corporation, the requirements of outside galvanizers, the consumptive requirements of the brass trade and the small amount called for by the leading desilverizers, which together represent what is taken in the open market, were less than one-half of the output of 1900. Most of the zinc exported is the high grade spelter of New Jersey, Pennsylvania and Virginia. Western spelter is also shipped by way of the Gulf ports, and a small quantity goes to the Canadian market. The United Kingdom takes the bulk of our spelter, being the heaviest consumer of foreign zinc.

CHANGES IN THE AMERICAN TIN PLATE COMPANY.

D. G. Reid has resigned as president of the American Tin Plate Company, and Warner Arms as second vice-president. Mr. Reid gives up the active conduct of the affairs of the company in order to devote his entire time to the duties of his position as a member of the Executive Committee of the United States Steel Corporation, and Mr. Arms to gratify a long expressed desire to rest from the exacting duties of active business after more than 30 years' continuous service. The vacancies occasioned by these changes have been filled by the election of the following named gentlemen: W. T. Graham, president; W. M. Leeds, first vice-president; Frank Dickerson, second vice-president. In connection with the office of second vice-president, Frank Dickerson will still retain his position as general sales agent of the company.

It is seldom that any city has in course of erection such a number of splendid new buildings as are now rising in New York. No less than six public structures of the first importance are in course of erection in the city. These are the Cathedral of St. John the Divine, the New York Public Library, the Custom House, the Hall of Records, the Chamber of Commerce and the Stock Exchange. Each of these buildings will form a notable addition to the architecture of New York, and will emphasize its standing as the metropolis of the Western Hemisphere.

Pattern for Elbow Springing from Pipe.

A correspondent in New Hampshire desires to know how to cut a pattern for an elbow springing from a straight pipe, a general view of which is shown in Fig. 1, where A is the vertical pipe and B the elbow springing from it. In this connection it is proper to remark that no matter what may be the diameter of either pipe, or whether the elbow be placed in the center of the vertical pipe or to one side of it, the principles to be explained will apply in any case.

To avoid a confusion of lines the elbow is made of a

parts as the profile in plan, being careful to number the top 4, while in plan the top is numbered 1. Assuming that I P in elevation is the axis of the profile I R P, the point 1 at R would, if the half circle were turned toward the reader, represent the side which is shown in plan by 1 and 1, while 4 and 4 in elevation would represent the top and bottom, as shown by 4 and 4 in plan. At right angles to I P in elevation and from intersections 1 to 4 in the profile draw lines as shown, intersecting I P, as shown by points 1° to 4° on I P. At right angles to I P and from points 4 and 3° draw lines intersecting the vertical lines 4' and 3' drawn from plan, as shown by intersections 4'' and 3''. In similar manner, from points 2°, 1°, 2x, 3x, and 4, draw lines at right angles to P I, intersecting the miter line, J O, as shown. Parallel to

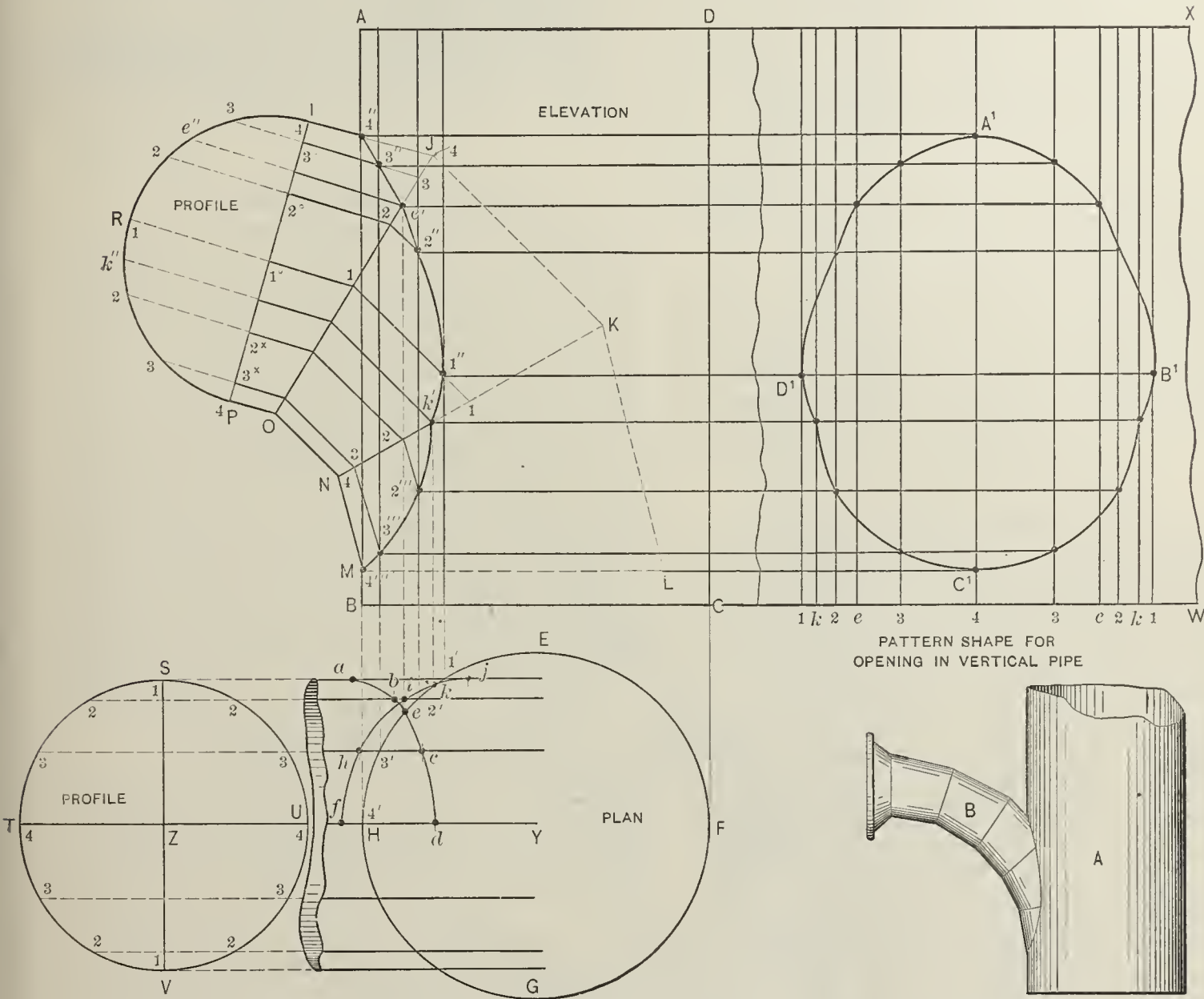


Fig. 2.—Plan, Elevation, Profiles and Shape of Opening in Vertical Pipe.

Fig. 1.—General View of Article for which Pattern is Required.

PATTERNS FOR ELBOW SPRINGING FROM PIPE.

larger diameter in Fig. 2 than desired, the principles being the same in either case. Referring to the diagram, let A B C D be the elevation of the vertical pipe, shown in plan by E F G H, and let I J K L M N O P show part of the elbow minus the intersection, the half profile of the elbow being shown by P R I. From the center point Y in plan draw the horizontal line Y T, and from any point, as Z, and with radius equal to 1° P in profile in elevation describe the circle T S U V. Divide the half circle S T V in plan into equal spaces, as shown by the small figures 1 to 4, &c. As the profile in plan is central in line with the cylinder each quarter circle is equally numbered. From points 1 to 4 draw lines parallel to T Y intersecting the plan of the vertical pipe, as shown from 1' to 4'. Now, at right angles to T Y and from intersections 1' to 4' carry vertical lines upward through the elevation of the vertical pipe, as shown. Divide the half circle P R I in elevation into similar

J K or O N, and from the points 2 and 1 on J O, draw lines intersecting the vertical lines in elevation of similar numbers, as shown by points 2'' and 1''. From the balance of the intersections on J O draw lines parallel to O N, intersecting the miter line K N at 2, 3 and 4. Then from these intersections and parallel to K L or N M draw lines intersecting vertical lines of similar numbers, as shown by 2''', 3''' and 4'''.

Before drawing the miter line through the points of intersection on the vertical lines in elevation it will be necessary to know where this miter line will intersect the miter lines of the elbow J O and K N. Therefore partial horizontal sections will be required on the lines J O and K N, for which proceed as follows: From the points of intersection 4, 3, 2, 1 on the miter line J O in elevation drop vertical lines, not here shown, intersecting horizontal lines of similar numbers in plan, as shown by intersections a, b, c and d. Through these

points trace the quarter elliptical figure, as shown, intersecting the circle in plan at *e*, being the point desired. From *e* draw the vertical line upward intersecting the miter line *J O* in elevation at *e'*. In similar manner, from the intersections 1, 2, 3 and 4 on the miter line *K N* in

For the pattern for the opening to be cut into the vertical pipe proceed as follows: In line with *B C* in elevation draw the line *C W*, upon which place the stretch-out of 1', *k*, 2', *e*, 3' and 4' in plan, as shown on either side of the line *C' A'* by 1, *k*, 2, *e*, 3, 4, 3, *e*, 2, *k*, 1 on the line *C K*. At right angles to *C K* and from these points carry lines upward, which intersect with lines drawn from points having similar letters and figures in the miter line in elevation at right angles to *D C*, as shown. Trace a line through points thus obtained in the pattern; then will *A' B' C' D'* be the pattern for the opening in the vertical pipe. From the point *k'* in elevation and parallel to *J K* draw a line intersecting the miter line *J O*. From the intersection thus obtained and from *e'* draw lines parallel to *J I*, intersecting the line *I P*, and cutting the semicircle at *e''* and *k''*.

For the pattern for the three pieces in the elbow, and to avoid a confusion of lines, take a tracing of 1, 4, 4'', *e'*, *k'*, 4''', *N*, *O*, 4 and 1 in elevation and place it as shown by similar figures and letters in Fig. 3, the line 4 4' being

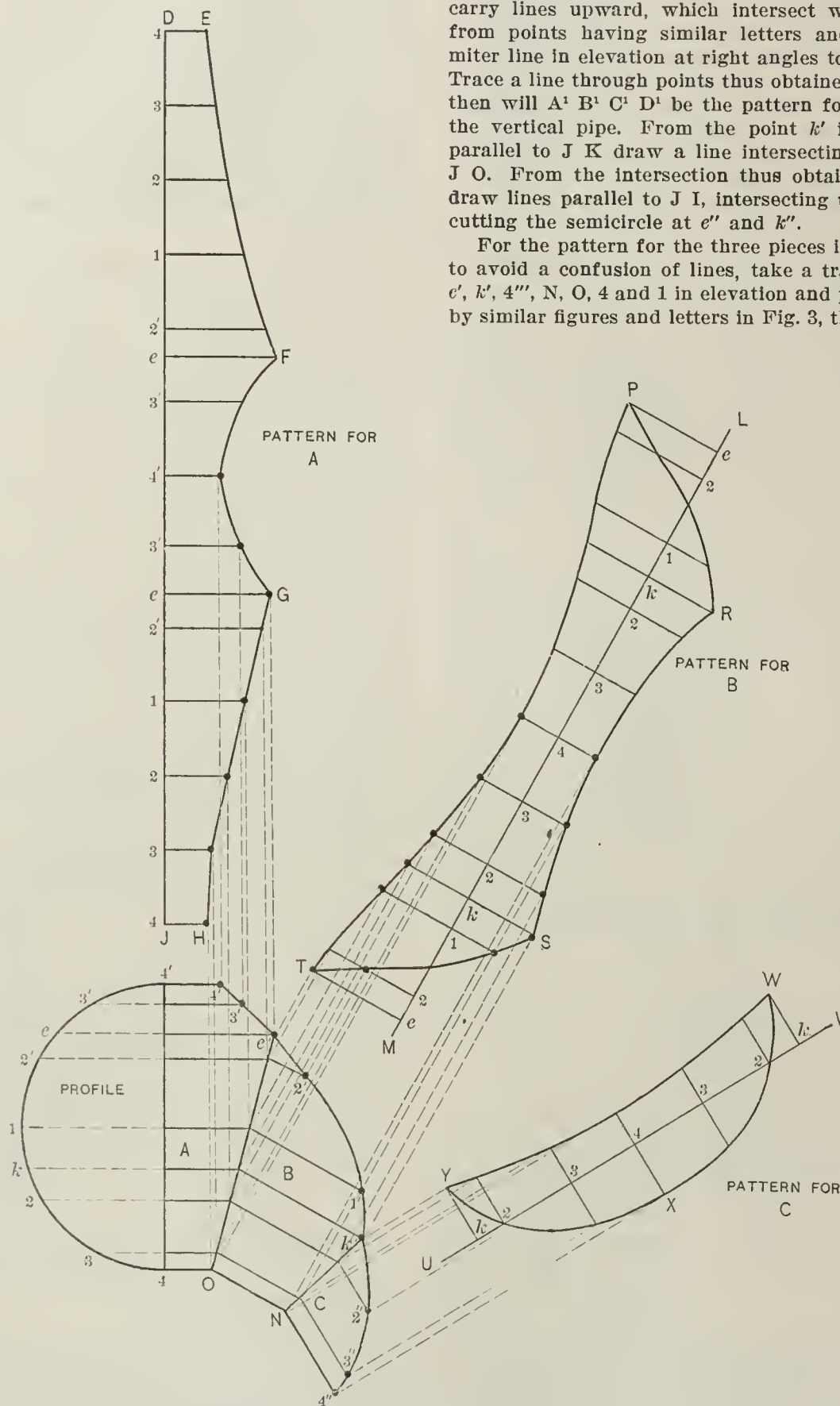


Fig. 3.—Patterns for Elbow Pieces.

PATTERNS FOR ELBOW SPRINGING FROM PIPE.

elevation drop vertical lines, not here shown, intersecting horizontal lines of similar numbers in plan, as shown by *f*, *h*, *i* and *j*. Trace a quarter elliptical figure through these points, as shown, crossing the circle in plan at *k*, the desired point. From *k* draw a vertical line upward intersecting the miter line *K N* in elevation at *k'*. Now through the intersection in elevation draw the curved line from 4'' to *e'*, *e'* to *k'* and *k'* to 4''', which represents the line of joint between the elbow and vertical pipe.

placed vertically. Then for the pattern for the piece *A* draw the line *D J*, upon which place the stretch-out of twice the amount contained in the semicircle 4 1 4', as shown from 4 to 4' on the line *J D*. Obtain the point *e* in the semicircle and place it between the points 2' and 3', on either side, on the line *D J*. From these points and at right angles to *D J* draw lines, which intersect with lines drawn from similar numbers in the miter lines *O*, *e'*, 4', parallel to 4 4'. A line traced through

points thus obtained, as shown by D E F G H J, will be the pattern for one piece of the elbow, marked A.

For the pattern for the piece B draw the line L M at right angles to N O, upon which place the stretchout of twice the amount contained in the profile from e to 4, as shown from e to e on the line M L, being careful to obtain the point K in the profile, and place it on M N, as shown. At right angles to M N and through the small figures draw lines, which intersect with line drawn from intersections of similar numbers on e' O, N k' and $k' c'$ at right angles to O N. Trace a line through points thus obtained; then will P R S T be the pattern for part B of the elbow.

For the pattern for part C draw the line U V at right angles to N 4", upon which place the stretchout of twice the amount contained in the profile from k to 4, as shown from k to k on the line U V. At right angles to U V and through the small figures draw lines, which intersect with lines drawn from intersections having similar numbers on k' N and 4" k' at right angles to N 4". A line traced through points thus obtained, as shown by W X Y, will be the pattern for part C.

Laps should be allowed on all patterns for riveting and seaming.

The Amalgamated Association.

Reports from Pittsburgh intimate that the officials of the Amalgamated Association of Iron, Steel and Tin Workers are planning a general reorganization, for the purpose of strengthening the association after the loss in membership sustained in consequence of the recent strike. The national officers are said to have come to the conclusion that the strike was lost largely by reason of the fact that the men in the inferior positions in the mills were able to take up the skilled work and fill the places of the Amalgamated men. The new policy of the association will be to take in all the mill workers and make them a part of the organization, so that the interests of all will be identical. These changes cannot take place before the next annual meeting to be held in the spring. In the meantime the Executive Board will prepare plans covering the proposed new arrangement. Changes will be necessary in the constitution and by-laws of the association before the unskilled workers and laborers in the mills can be admitted into membership in the association.

New Sheet Rolling Process.

Joseph W. Keefer and Charles B. Cushwa, of Pittsburgh, Pa., have patented a method of rolling sheet metal which does away with a number of the reheatings employed in the ordinary process and also with the many manipulations and handlings, while the cost of production is reduced. The new process is thus described by the *American Manufacturer*:

Heating furnaces are provided wherein the ingots, billets or slabs are heated to a rolling temperature. From these furnaces the heated ingot, billet, or slab is transferred to a feed table of a rolling mill, being either a two-high reversing mill or a three-high mill, the latter preferred, the mill being provided on its rear side with another feed table. The heated ingot, billet, or slab is passed back and forth through this mill in the usual manner until it is reduced to a plate of approximately the width of the sheets to be formed and from about $\frac{1}{8}$ to $\frac{1}{4}$ inch thick, depending upon the gauge of sheet plate to be produced, the rolling of this gauge from the ingot, billet or slab being accomplished at a single heat. From this mill the plate is conveyed along a table to a shear where it is sheared into sections of suitable length for convenient piling and rolling. These sections of plate are then formed into piles consisting of two, three or more, depending upon the gauge of sheet plate to be produced, and are fed into a continuous reheating furnace, the furnace being of a well known construction, wherein the plates are fed in at one end, carried through and removed from the other end. The piles or packs are heated in a furnace to a suitable rolling temperature, and then two or more such piles or packs are entered simultaneously into two or more parallel continuous or

tandem mills. Two such mills are preferably used, each of which comprises four stands of rolls, with suitable guides between the same; but either more or less than four stands may be used, if necessary or desired. From these mills the reduced packs pass simultaneously upon two feed tables, and the pack or pile on one of the tables is transferred in any manner over to the other table and placed on top of the pack on the table. When the packs or piles leave the tandem mills, they have been reduced to as thin a gauge as is possible owing to the spring of the rolls and the slack in the adjusting means of the last stand of rolls in said mill, and a further rolling of these packs singly would not result in any material further reduction of the same, due to the slack and spring of the rolls and their adjusting means. Consequently the reduced packs or piles are assembled one on top of the other, as stated, and being still at good rolling temperature, are passed through another continuous or tandem mill, the same comprising two or more stands of rolls, as necessary, with suitable guides between, and in this mill the double packs are further reduced successively in the different stands, and the spring in the rolls and the slack in the adjusting means of the last stand will not be so great as to prevent the packs being brought to the desired gauge.

The packs are then conveyed by live rollers and endless chains or any other convenient conveyor to two shears, where they are sheared to the desired size, after which they are opened up in any way and the sheets conveyed by live rollers to cold rolls, through which the sheets are separately passed to smooth down the surface and finish the same. The sheets as they leave these rolls are again piled, preferably on the bottom plate to an annealing box, and when sufficient sheets have been piled thereon they are conveyed by a crane or similar device and placed in the annealing furnace and subjected to the ordinary annealing process.

"When a Roof is Not a Roof."

All who do tin roofing will be more or less interested in the methods adopted by Gara, McGinley & Co., 23 South Seventeenth street, Philadelphia, for extending their roofing business. We have just received from them a little four-page illustrated pamphlet with the above title. A half-tone engraving on the front cover shows a comfortable home, and one on the back shows the ceiling fallen, as the result of a leaky roof, with numerous pans, buckets and other vessels occupying different places on the floor to catch the downpour. This is well calculated to attract the attention of the recipients of the pamphlet to the condition of the roof, whether tin, tile, slate or slag. Inside the cover is a quotation from Benjamin Franklin to the effect that "In a permanent structure a good roof is only second in importance to a good foundation." A feature of the pamphlet is a piece of tin plate taken from a roof, showing the marks of rust on the under side and poor painting on the upper side. The text raises the pertinent question whether or not the roof of the owner addressed may not have been affected by the "noiseless gnawing of the tooth of time," as shown by the sample. It also explains that the firm make a specialty of examining roofs, spouts and gutters with a view to putting them in proper order. Accompanying the pamphlet is a private mailing card already stamped so that those who receive it may order the inspection of their roofs. A slip is pasted to this card pointing out that a new tin roof or gutter should be painted as soon as completed, and should receive another coat of paint one year afterward, another at the end of three years, and thereafter as often as required. The last page gives a bird's-eye view of the roofs of Philadelphia, four-fifths of which are said to be covered with tin. The statement is made that the house have had an extensive experience with all kinds of roofings, and are prepared to replace or repair, using only the best materials. The character of this advertising matter shows that even such a subject as tin roofing may be brought to the attention of property owners in an entertaining and attractive manner, and that an increased trade may be attracted to those who adopt such methods.

FLASHINGS.

THE STARK ROLLING MILL COMPANY, Canton, Ohio, have made a successful start of their new Sheet mill. The plant consists of four Sheet mills and a Bar mill. The company are closely allied with the Berger Mfg. Company, which concern will use a large part of their product in the manufacture of their various Sheet Metal specialties.

JOHN JARRETT, head of the Labor Bureau of the American Sheet Steel Company, has returned to Pittsburgh after a trip to Europe for the benefit of his health.

RUMORS have been revived of the contemplated absorption of the American Can Company by the United States Steel Corporation. Ever since the formation of the Can company the conviction has prevailed that in the course of time the concern would be amalgamated with the Steel Corporation. A majority of the directors of the company are also directors of the various constituent companies of the United States Steel Corporation, and the relations of the Can company have always been of the closest with the American Tin Plate Company. It is estimated that the Can company consume about 50 per cent. of the total output of the Tin Plate made by the American Tin Plate Company.

GUMMEY, McFARLAND & Co., Philadelphia, Pa., are displaying at their office a piece of their Pennsylvania Old Method brand of Roofing Tin, which had laid on the ground for 18 months, unprotected by paint or any other means, without showing any sign of rust or deterioration. This piece of Plate was from a lot used on the roof of a boat house at Runnemede, N. J. It speaks well for the wearing qualities of the brand of Tin Plate mentioned.

THE Burger plant of the American Can Company, in Jersey City, N. J., was destroyed by fire on the evening of Friday, October 18. The loss is estimated at about \$75,000, half of which is covered by insurance. The plant was a four-story frame structure, 120 x 60 feet. The stock and machinery of the Beggs Can Company was recently removed from New York City to the Burger plant and has consequently been lost. A considerable stock of Tin Plate was stored in the factory at the time of the conflagration.

THE EAGLE CAN COMPANY of Huntington, L. I., have been incorporated with a capital stock of \$50,000 by A. M. Dickson, A. E. Stacy and J. T. Bergen of Brooklyn, N. Y.

THE PRAIRIE & SHOEMAKER TIN, SHEET IRON & COPPER WORKS are a new concern that have started in business at 3424 State street, Chicago.

EDWARD E. ERIKSON of Pittsburgh, Pa., has been awarded the contract for a heating furnace for the Ashland Sheet Mill Company, who are putting up a four-mill Sheet plant and a Bar mill at Ashland, Ky.

THE LAUGHLIN plant of the American Tin Plate Company, at Martin's Ferry, Ohio, had all of its 23 hot mills in operation last week.

THE LICKING ROLLING MILL COMPANY, Covington, Ky., have purchased a tract of land adjoining their works and will erect thereon a corrugating plant as an addition to their equipment.

THE WEST CARNEGIE SHEET STEEL COMPANY is the name of a new concern that will be incorporated shortly by George W. Wilson, D. R. Torrance, Joseph R. Paull, W. H. Skivington and G. N. Chalfant of Pittsburgh, to build a Sheet mill near Carnegie, Pa.

THE NATIONAL TIN COMPANY of Detroit, Mich., have been organized with a capital stock of \$100,000 to make Tin Cans and Boxes. The officers are: Theo. D. Buhl, president, and Fred. T. Ducharme, secretary. These, together with William M. Warren, Frank W. Eddy, E. H. Nelson, David M. Ireland and Fred. E. Wadsworth, form the Board of Directors.

It is reported that parties are in correspondence with the Commercial Club of Louisville, Ky., relative to the establishment in that city of a plant for the manufacture of Sheet Iron by a new process.

THE W. H. GRIFFITHS COMPANY, who are erecting a five-mill Tin Plate plant at Waynesburg, Pa., expect

to have the new works in operation before January 1. The foundations for the mills and machinery are about finished and work will be actively prosecuted on the completion of the plant.

THE DOWMAN COMPANY, Atlanta, Ga., have just taken the contract for the Sheet Metal work on the Peters office building in that city. The company have in hand a large number of orders for their Dixie Ventilators and Hot Air Furnaces.

It is reported from Loudon that negotiations are on foot for the amalgamation of the Tin and Sheet Mill Men's Union and the Smelters' Union, which are the two labor organizations which the Tin Plate workers of South Wales joined when the Tin Platers' Union was dissolved some little time ago.

On the organization of the American Tin Plate Company and the American Sheet Steel Company agreements were entered into with the manufacturers of Tin Plate and Sheet mill machinery, which guaranteed to the latter a certain amount of business, in consideration of which no mill equipment was to be sold by them to independent concerns. These agreements, it is understood, will now be canceled by the United States Steel Corporation and no more subsidies will be paid to the machinery and roll manufacturers. The only effect of the arrangement was to encourage the starting up of new foundry and machinery plants, so that the agreement proved to be of little value to either party.

It is stated that instead of removing their Johnstown, Pa., plant, the American Tin Plate Company will enlarge and improve it at a cost of about \$250,000.

THE TUSCORA STEEL COMPANY are building a four-mill Sheet plant and Galvanizing works at Newcomers-town, Ohio. The company have received from the town a cash bonus of \$30,000 and a free site for their works.

THE EDWARDS MFG. COMPANY, manufacturers of Artistic Sheet Metal Work, Architectural and Ornamental Statuary, Zinc and Copper Spun Work, &c., have removed their office from Covington, Ky., to 119 Sycamore street, Cincinnati, Ohio, where they have established a factory for the manufacture of Cornices of all kinds. They expect to operate both plants and would be pleased to send their catalogue to those interested.

THE GRIFFITHS CHARCOAL IRON MILLS, Washington, Pa., have let contracts for two hot and two cold mills, together with a Bar mill and forge and eight knobbling fires, for making Charcoal Iron and reducing it to Sheets for Tin and Terne Plates. Work has been commenced on the plant, and it is expected to be in operation early next year.

THE WOODCOCK CAN COMPANY, Chicago, were incorporated in Illinois last week with a capital stock of \$3500 to manufacture Tinware and Sheet Metal goods. The incorporators are John T. Woodcock, Charles P. Woodcock and J. H. Ghiselin.

THE SEIBEL-SUEDSDORF COPPER & IRON MFG. COMPANY, St. Louis, Mo., manufacturers of Perforated Metal, have been incorporated with a capital stock of \$25,000.

THE WAUKESHA SHEET STEEL COMPANY of Waukesha, Wis., are pushing the erection of their boilers, so as to start the new plant by November 5.

It was announced from Pittsburgh that President Shaffer of the Amalgamated Association was to come to New York City at the end of this week to consult with the officials of the American Tin Plate Company in regard to some minor scale complications which have arisen in several of the company's plants.

H. WEISS & Co., 20 Cliff street, New York, are sending to the trade a price-list of their Skylight Gearing Specialties, adapted for the opening and closing of Skylight Ventilators and Ventilators in greenhouses or any class of buildings. The back of the circular presents cuts showing the various parts used in the apparatus.

To keep iron nails, used in wooden construction work, from rusting after a few months' exposure, a contemporary advises, heat the nails to a cherry red and throw them quickly into a pot of raw linseed oil, then drain off the oil, and let the nails become fairly dry before using.

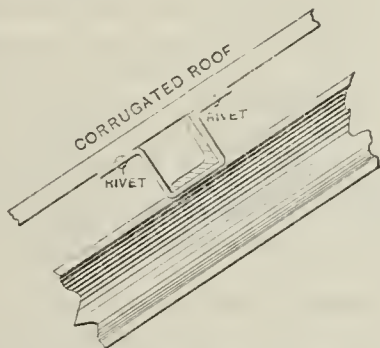
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

FASTENING CORRUGATED IRON ROOFING.

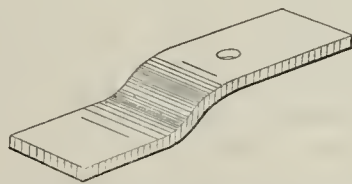
From J. H. Eller & Co., Canton, Ohio.—In answer to the inquiry of "O. C. R.," in *The Metal Worker* of October 19, we would say that the usual method of fastening corrugated sheets to the steel frames, or to



Fastening Corrugated Iron Roofing.—Sketch Submitted by J. H. Eller & Co.

roof trusses, is to use a clamp or clip made of ordinary band iron. This should be of sufficient length to be riveted at each end to the corrugated iron after it has passed around the angle iron or I-beam, whichever may be used, as shown in the illustration herewith.

From the New York Roofing & Corrugating Company, Jersey City, N. J.—Replying to the inquiry of "O. C. R.," in *The Metal Worker* of October 19, as to the best way of fastening corrugated iron roofing, we would say that clamps are made from hoop iron, especially adapted to the angle iron, I-beam, or tee beam, on which the roof must lie. The sketch herewith shows such a clamp made from hoop iron, about $\frac{1}{8}$ inch thick and 1 inch wide, and bent so that one end will catch under the web of the beam. The other end should be

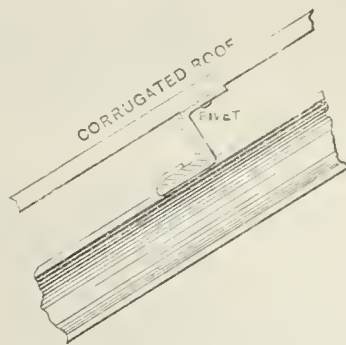


Fastening Corrugated Iron Roofing.—Sketch Submitted by New York Roofing & Corrugating Company.

fastened to the roof by means of a rivet. In doing this kind of roofing it is necessary to have two men—one underneath to put the clamp in place and arrange for the hole to be punched for the rivet, and then to hold a square head stake or other suitable weight under the head of the rivet, so that the man above with the hammer can do the riveting. These clamps can be made in any shape required and bent in the ordinary cornice makers' brace bender. All that is necessary is to punch a hole in one end for the rivet, and in light material this would be no difficult task in the ordinary cornice shop.

From the Berger Mfg. Company, Canton, Ohio.—In answer to the inquiry of "O. C. R.," in *The Metal Worker* of October 19, we present herewith a sketch showing a good way of fastening corrugated sheets to a steel building. It will be seen that one end of the clamp is riveted to the roof and the other end bent around the angle iron. After the size and shape have

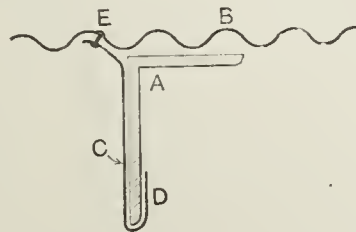
been determined, these clamps can be punched with facility in the shop. In fact, if the size of the iron frame



Fastening Corrugated Iron Roofing.—Sketch Submitted by Berger Mfg. Company.

of the roof support is known, they should be made before going on the roof.

From W. N., New York.—Replying to your correspondent, "O. C. R.," of Grand Forks, B. C., whose inquiry appeared in *The Metal Worker* of October 19, on fastening corrugated roofing to steel rafters, I show herewith the clamp we use in practice on work of this kind, whether it is roofing or siding. In Fig. 1 let A



Fastening Corrugated Iron Roofing.—Fig. 1.—Section Showing Roof, Angle Iron and Clamp.—Submitted by "W. N."

represent the angle iron and B the corrugated sheet; a clamp shown at C, made of flat iron 1-16 x $\frac{1}{2}$ inch, has a loop at D to fit the angle A tightly and a flange at the top, which is riveted to the highest point of the corrugation by the rivet E. Fig. 2 shows the clamp, which is cut to the required length, punched to fit the rivet in

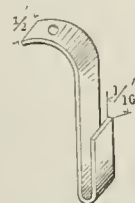


Fig. 2.—General View of Clamp.

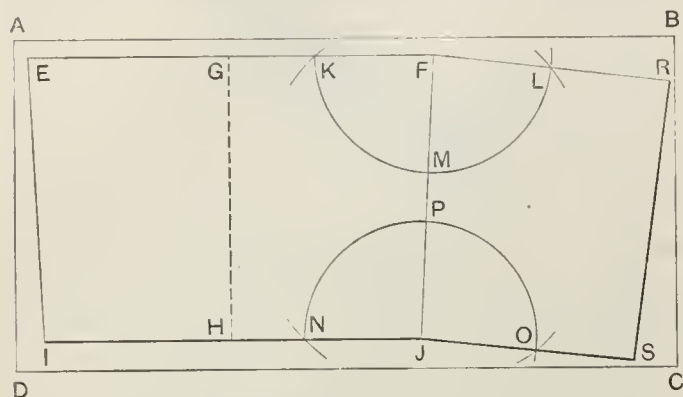
use, and then formed to fit the size of the corrugation in use at the top, and the proper length and loop to fit the rafter or angle at the bottom.

COPPER STOVE RESERVOIR.

From G. W. G., Pawling, N. Y.—Will you please describe the correct and quickest way to make a copper stove reservoir out of 14 x 48 inch sheet copper, with two seams in the body? The finished reservoir is to be 12 inches deep, 17 x 10 inches at the top and 16 x 9 inches at the bottom.

Answer.—Assuming the body is to be in two pieces, with seams at two corners, it will require using stock size of 14-inch wide copper, a length of 28 inches for each half pattern. As we understand out correspondent's question, he desires the correct rule for laying out the pattern direct upon a sheet of copper without using any drawings but the measurements above given. In Fig. 1 let A B C D represent a sheet 14 x 28 inches in size; draw the line E F parallel to A B, making the distance A E equal to the width of the top flange, and place E from the edge A D as much as required for edges for seaming. Make E F equal to 17 inches and bisect the line as at G. From G at right angles to E F draw G H, equal to 12 inches, and from H parallel to E F

draw I J, making H I and H J each equal to 8 inches, making I J 16 inches; draw lines from E to I and F to J. Then will E F J I be the pattern for the long side. As the flare is equal all around, then, with F as center and any radius, describe the arc K L, intersecting the line F J at M. With M as center and M K as radius inter-



Copper Stove Reservoir.—Fig. 1.—Body Pattern.

sect the arc K L at L. Draw a line from F through the intersection L, as F R, which make equal to 10 inches. In similar manner the angle P O can be made equal to P N; or, from J draw the line J S parallel to F R, making J S equal to 9 inches, and draw line from R to S. Then will E F R S J I represent a one-half pattern for the reservoir, flanges to be allowed for seaming. It will be noticed we have made the distance from G to H 12 inches, or the depth of the article, because in this case the flare, as shown from B to C in Fig. 2, is but 1-32 inch more in length than the straight height. If, however, the flare was greater, the distance from B to C would be the length from G to H in Fig. 1. In Fig. 2 is shown the section through the article with flanges at A and B and double seams at the bottom at C and D. If desired the

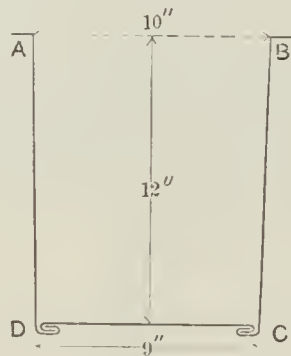


Fig. 2.—End Section.

corners can be slightly rounded. We would suggest that 28-inch wide copper be employed; as that is stock size, no waste will result.

TROUBLE WITH ACETYLENE APPARATUS.

From D. M. W., San Antonio, Texas.—We desire a little information in reference to a troublesome acetylene gas plant in this vicinity. Some time since a 20-light machine was installed in a church not far from us. The church building is 45 x 54 feet, having 14-foot side walls, and the ceiling is arched so that it measures 25 feet high in the center. Twelve lights were placed in the building in six drops equally distributed, so that the lights are about 9 feet above the floor, and are said to carry a 24 candle-power burner each, with ordinary street gas globes around them. The lights do not give satisfaction for the following reasons: The room is full of shadows, although a person can read fairly well, and occasionally one of the burners sputters and smokes. But the most objectionable feature is that one or more of the burners are continually hissing, making a sound like the escape of steam. The noise comes from different burners alternately.

Knowing a little about gas fitting, after serving a full apprenticeship time in a European country, we think the capacity of generators in use there in cubic feet of space in the gasometer is exactly 50 per cent. larger for a given number of lights than most of the generators

used in this country, including the generator used in the church mentioned. We have made it a rule in everything that we make to provide ample capacity, making it rather too large than too small, and to use the very best fittings obtainable. The result has been always satisfactory to all concerned. The main feed pipe in this church lighting apparatus is only $\frac{1}{2}$ inch, while we claim that it should have been at least $\frac{3}{4}$ inch. In our opinion the trouble at the church is due, first, to the generator being too small; second, the main feed pipe is too small; third, the burners and globes are of a cheap grade. This makes the lights dull and is the cause of the shadows. The hissing noise and the sputtering of the burners, we believe, is caused by the generators being worked to the fullest capacity, thereby making hot gas, which will carbouize and clog up the pipe.

The generator used is of the kind with a basket for carbide fastened inside the bell of the gasometer, the gasometer itself for 20 lights being only 27 inches by 30 inches deep. The basket takes up a space 7 inches by 18 inches deep. The machines that we use have the generators separate from the gasometer, and the gasometer has 50 per cent. more capacity for the same number of lights. The plant was installed by a friend whom we believe to be an expert, having had 15 years' experience as superintendent of the city gas works, and who has put in a number of acetylene plants with good results. He is of the opinion that the job will work satisfactorily within a few weeks. What we wish to learn for our own benefit is what causes the trouble mentioned, and if our theory of the case is correct. We are very anxious always to be certain of success before entering upon any piece of work. Being connected with this particular church, the job was offered us. We did not accept it, as we do not desire to do any work where we have to follow nonmechanical instructions, as was necessary in this case.

Answer.—The problem of our correspondent has been submitted to Augustine Davis, an expert on acetylene lighting and apparatus, who has prepared the following explanation of the causes of the poor service rendered by the system described:

The first trouble is due to this type of generator being antiquated and out of date. No progressive generator maker now constructs a machine in which the carbide is carried by the bell, as it has inherent deficiencies which are impossible to overcome. In the next place, the amount of light is insufficient even were it produced under the most favorable conditions. The rule in store lighting is to place one $\frac{1}{2}$ -foot burner for every 100 square feet of area. Under this rule the church would require 24 burners, with no higher ceiling than a mercantile room. But the average light of the church ceiling is about double that of the business place, so that the amount of light should be increased. Shades or deflectors that would throw the light downward would undoubtedly obviate the trouble to some extent.

The hissing noise is undoubtedly caused by irregularity of pressure in the machine, caused by the gas holder not moving smoothly, or possibly from air mixture. The sputtering is caused by condensation occurring in the burners, a condition which does not exist when the gas is properly condensed and purified. A continuous snapping and popping in the burner is caused by little leaks in the burner itself.

The $\frac{1}{2}$ -inch pipe is ample to supply the amount of acetylene gas consumed. Poor globes and burners are unquestionably a detriment, but even the best burners would in all probability quickly clog and smoke with the method of generation employed. Generators are constructed with gas holders only 17 x 24 inches, which supply 25 lights perfectly, but they are built in accordance with the latest ideas and are the result of long and continuous experience. It is not stated how the generator in question is charged. If the recharging admits a considerable amount of air, this would for some time have a tendency to produce dullness of light and reduce the amount. The piping is about the only thing in connection with the whole plant which is conducive to good illumination. Larger burners would, of course, increase the light.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and lower.
Copper is quiet and unchanged.
Pig Lead continues dull and prices firm.
Spelter is dull and firm at last week's prices.
Antimony is unchanged.
Nickel continues at former prices.
Aluminum is active and unchanged.
Tin Plates are in good demand for spot delivery and still scarce.
Sheets are still in good demand, with prices strong and supply short.
Old Metals are more active, with no change in price.
Sheet Copper is in good demand and firm in price.
Foundry Iron is moving in good volume; prices are strong.
Hardware continues in active demand, with prices firm in most lines.
Russia Iron is scarce and higher.
Tacks are higher in price.
Poultry Netting has been advanced slightly.
Wire Nails are active, with some irregularity in prices of competitive mills.
Cut Nails are in moderate demand, and without change in price.
Wire is still in heavy demand, and prices rule firm.
Set and Cap Screws were reduced 10 per cent. in price.
White Lead is active and unchanged.
Linseed Oil is scarce, with firm prices.
Spirits Turpentine is quiet; supplies are light.

METAL MARKET.

NEW YORK, October 25, 1901.

Pig Tin.—For reasons mentioned in our last report the market for Pig Tin continues very quiet, so far as consuming business is concerned. The speculative interest is also very tame. Large consumers are well supplied for the balance of the year and are not disposed to buy any further ahead until they can see the course of the market more clearly, and only the smaller ones are now purchasing. Prices have not varied much during the week, but rule slightly lower than at the time of our last report. Straits Pig in small lots is quoted at 25½c. to 26c. per lb.

Copper.—Despite numerous press reports regarding large sales and increased activity the situation in Copper is absolutely unchanged. None of the large consumers are buying into the future. In regard to the buying for small account the demand was of smaller proportions than last week. Prices are unchanged, the small consumers being obliged to pay the full market figures asked by the large producers. Lake Ingot in small lots is quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c.

Sheet Copper.—There has been no change in the general situation of this material. The demand continues of fair proportions, and prices are firm on the basis of 21c. per lb. for moderate sized lots from store.

Pig Lead.—Business in this market continues very dull. The volume of transactions during the week has been light. Prices are unchanged. American Pig in small lots is quoted at 4.62½c. to 4¾c. per lb. St. Louis advices indicate a quiet and steady Pig Lead market, with prices remaining the same.

Spelter.—The upward movement in Spelter has received a check and the market has been dull, at prices unchanged from those quoted last week. There is certainly no scarcity of the metal indicated in the St.

Louis reports. Good Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. St. Louis advices report a strong market for Spelter, with prices firm and having a tendency to work higher.

Sheet Zinc.—No change has occurred in the market for this material. Jobbers are quoting 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7c.

Antimony.—Is unchanged. Hallett's in small lots is quoted at 8½c. to 9¼c. per lb., and Cookson's at 10½c. to 11c.

Nickel.—No change is reported in this metal. Prices for small lots continue at 60c. to 65c. per lb.

Aluminum.—The demand for Aluminum continues active and prices remain at 37c. per lb. for small lots of No. 1 Ingot guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—Owing to the fact that all of their mills are filled completely up to the first of the year, the American Tin Plate Company are quoting only for the first quarter of 1902. Their quotations remain unchanged from those prevailing for some months past. New business is not so plentiful as it was this time last year, but deliveries are naturally much heavier, owing to the accumulation of orders during the strike period. Vegetable canners will probably run 25 per cent. behind their usual pack this year, consequently the demand from this quarter is comparatively light. Other industries using Tin Plates are apparently very busy, as the demand for prompt and early delivery is good. Stocks in second hands do not as yet show any material increase, Coke Plates being particularly scarce in this market. Jobbers have reduced their price on Bright Charcoal Plates about 25c. per box. While retail quotations are still merely nominal, a fair average quotation for American Bessemer Coke Plates, I C, 14 x 20, delivered in moderate sized lots in New York or corresponding points, would be \$6.50 to \$6.75 per box.

Sheets.—The mills are making somewhat better deliveries of both Black and Galvanized Sheets, but are still far behind on contracts. Large orders for Sheets have been entered by the mills for next year at prices which are in effect by the leading interests at the time shipments are made. There is very little falling off in the demand, and it is not thought there will be any let up until after the Christmas holidays. No. 27 One Pass Cold Rolled Soft Steel Sheets are quoted by jobbers at 4.15c. to 4.20c., and Galvanized Sheets at 65 per cent. off the list. An advance has been made in the price of genuine Russia Iron, owing to supplies of this metal having been considerably depleted during the prolonged scarcity of American Planished Iron. Russia Iron is now quoted at 11c. to 13c. per lb.

Chicago advices are as follows: The supply is growing a little better, but it is not yet large enough to fully satisfy the trade. Stove Pipe sizes of Black Sheets are in very urgent demand, and on these sizes jobbers are still asking 4c. Other sizes of No. 27 Black Sheets are easier, and can now be had at 3.75c. to 3.80c. Galvanized Sheets are a little more plentiful, and small lots from stock are selling at 65 and 5. Great scarcity continues in Bright Tin Plates, and high prices still rule for spot Plates. The stocks of Terne Plates are getting a little larger, and the trade is consequently being better supplied.

Old Metals.—The market for Old Metals is rather more active; prices are unchanged. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14¾c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¼c.
Light Brass.....	per lb. 7½c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.

Tin Plate Scrap, per gross ton.....	\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.25 to 7.50
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—There has been a moderate amount of buying for delivery during the balance of the year. One large contract, under negotiation for a considerable period, has not yet been closed. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$15 to \$15.50; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$14.75 to \$15; No. 2 Soft, \$14.50 to \$14.75; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—The slight lull noted in last week's report proved to be simply the prelude to a spurt of decided activity. The transactions during the week have been on a large scale, it being estimated that from 25,000 to 30,000 tons were placed under contract. The business thus placed was well distributed among Northern and Southern brands. A strong demand continues for Spot Iron, which is quite scarce. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.25 to 16.00
Local Coke Foundry, No. 2.....	14.75 to 15.25
Local Coke Foundry, No. 3.....	14.25 to 14.75
Local Scotch, No. 1.....	15.25 to 16.00
Ohio Strong Softeners, No. 1.....	17.00 to 17.50
Southern Silvery, according to Silicon.	15.65 to 16.00
Southern Coke, No. 1.....	15.15 to 15.40
Southern Coke, No. 2.....	14.40 to 14.65
Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—The demand has been of a very satisfactory character, and sellers have no difficulty in securing quite a full line of business at prices within the range quoted in our recent report. Stocks of Iron both in first and second hands are at a low point, consequently deliveries are called for with great urgency. This, of course, imparts a strong feeling to sellers, as with everything sold close up there is no necessity for running after new business. The average sales during the past week may, perhaps, have been a trifle higher than last week, but the range remains as follows for Philadelphia and nearby points, and 25c. to 50c. lower for deliveries within a radius of 100 miles, south or west: No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.50 to \$14.75.

PITTSBURGH.—The whole Pig Iron market is very strong and there is a scarcity of Iron for prompt shipment. The output of the Bessemer furnaces is pretty well taken care of for the balance of the year. Foundry Iron is very firm, and some of the Valley furnaces report sales of No. 2 at \$14.50, at furnace, equal to \$15.25, Pittsburgh. We quote Standard Bessemer Iron at \$16; No. 1 Foundry, \$15 to \$15.50; No. 2, \$14.50 to \$15, and No. 3, \$14 to \$14.50, all f.o.b. Pittsburgh.

CINCINNATI.—The situation in the Pig Iron market is as good as could be asked for. There has been a very good run of orders, mainly of medium size, and almost altogether for delivery in the first half of next year. The outlook is for a good steady market for some time to come. We quote f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$15.10 to 15.60
Ohio Silvery, No. 2.....	14.60 to 15.10
Lake Superior Coke, No. 1.....	15.10 to 15.60
Lake Superior Coke, No. 2.....	14.60 to 15.35
Lake Superior Coke, No. 3.....	14.10 to 14.85

ST. LOUIS.—The requirements in the Pig Iron market continue very heavy, with no sign of lessening in the demand. Orders for delivery during the first three months of 1902 are very numerous, and a number are noted covering the first six months of the new year. It is reported that some difficulty is being experienced on account of a shortage of cars for transporting the Iron from the furnaces. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 2 Foundry.....	14.00 to 14.25

Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

CHICAGO REPORT.

Scrap Iron and Steel.—The demand is falling off and lower prices have to be taken to effect sales. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$12.00
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.50 to 10.00
Old Gas Pipe and Boiler Tubes.....	11.00 to 11.50
Cast Borings.....	4.50 to 5.00
Turnings.....	9.50 to 10.00
Horseshoes.....	to 13.00

Old Metals.—Some improvement is observed in the movement of Metals, especially Copper and Brass. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14½c.
Copper Bottoms.....	13 c.
Copper Clips.....	14 c.
Red Brass.....	13½c.
Yellow Brass.....	9½c.
Red Brass Borings.....	11½c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3½c.
Zinc.....	2.80c.
Tin Foil.....	20 c.
Pewter, No. 1.....	17 c.
Pewter, No. 2.....	14 c.

Old Rubber.—Only a moderate demand is reported. An error was made last week in the quotation on Shoes. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7¾c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 75c. to 85c. per 100 lbs., in any quantities.

Anthracite Coal.—The trade is hampered by the great shortage of cars at the mines. The demand is heavy. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

WHEN the management of the Pan-American Exposition at Buffalo decided to adopt the Frink Reflectors for lighting the railway station and Transportation Building, they were doubtless thoroughly familiar with the sterling qualities of these Reflectors, which have radiated light in all parts of the world for nearly half a century, so that the award of a silver medal would seem to be a just recognition of their many valuable points of advantage and superiority in lighting capacity, durability and appearance. We are advised that these Reflectors have been awarded a medal in every exhibition in which they have been entered, and as they are made in every conceivable shape, size and style for every possible purpose, a catalogue of their numerous products is well worth having. A card addressed to I. P. Frink, 551 Pearl street, New York, will bring a ready response to any inquiry along the line of light.

THE JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J., manufacturers of Dixon's Silica-Graphite Paint, are sending through the mails a card upon which is printed a letter from one of the most prominent bridge makers of the United States, bearing testimony to the excellent results obtained by him in the use of this Paint, which he considers the best kind of metal preservative.

THE HARDWARE TRADE.

The demand upon the manufacturers has apparently increased within a week or two. Orders are for the most part to fill up gaps in the stock and thus complete assortments. With the difficulty in obtaining raw material there are a good many lines which are in short supply and many hurry orders are being received by the makers. While on some lines manufacturers are keeping up with the demand, on others and perhaps an increasing number they are considerably behind, causing more or less inconvenience to the trade. The tone of the market is decidedly firm with the exception of a few lines, which, owing to special circumstances, are more or less under suspicion. The trade is certainly feeling the effect of reaction from high combination prices in certain lines, with a probability that more changes of this character are to be looked for.

The tone of the iron market is a source of strength to iron products generally and no important early change in prices is apparently anticipated by the trade, who are conducting their business vigorously on the theory that present satisfactory conditions are likely to continue at least until the end of the year, and that even after that date there is no reason to apprehend any disturbance of the existing prosperity. There is, however, no disposition to buy beyond requirements in view of the fact that prices are more likely to be lower than higher next year. The reports from merchants, both wholesale and retail, continue satisfactory, indicating that an excellent business is doing. Stocks in the hands of both classes are for the most part fairly large and well assorted, but reflect the difficulty above referred to in obtaining some kinds of goods.

NOTES ON PRICES.

Steel Enameled Bathtubs.—Following the lead taken by the other makers of this line of goods, Seestedt Bros. Mfg. Company, Romulus, Mich., have withdrawn all prices on their All Steel Enameled Bathtubs Nos. 20, 21, 22 and 23. This firm have also withdrawn prices on their line of Closet Seats. The local market for Steel Enameled Bathtubs has undergone no change since the prices were marked down 5 per cent. two weeks ago. It looks as though prices will remain stationary for the next month or two.

Steel Sinks.—The Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, under date of October 22, withdrew all quotations on Sinks, Sink Backs and Brackets. New prices will be furnished on application to the home office.

Refrigerators.—The manufacturers of Refrigerators have advanced prices 5 per cent. While there is no association of Refrigerator manufacturers or any arrangement whereby a uniformity of price can be enforced, they have agreed upon the present advance, which is considered desirable as enabling the makers to turn out better goods, and at the same time steady the market. Orders for Refrigerators are said to be coming in very freely and the prospects are favorable for a large business during the coming season.

Tacks.—The Tack market within the past few weeks has shown some improvement and prices are perceptibly and in some cases quotably higher. There is apparently a better understanding between the manufacturers than has heretofore prevailed, and some of them have been withdrawing quotations and announcing higher prices. The difficulty which is experienced in obtaining the raw material tends to strengthen the market. The volume of business, too, is very satisfactory, and in several lines manufacturers have difficulty in supplying the trade as promptly as desired.

Steel Goods.—There is a good deal of unevenness in the market on Steel Goods, as there is no agreement between the manufacturers, and active competition has developed. The result is that materially lower prices are current, and it is evident that next season the trade will be purchasing this line of goods at material concessions from prices which ruled last season. Orders are

being placed by the large buyers quite freely, but in most cases we are advised that it is under a guarantee.

Set and Cap Screws.—A reduction of about 10 per cent. has recently been made by the manufacturers of Set and Cap Screws. The market is referred to as well maintained at the new price.

Poultry Netting.—A slight advance has been made by the manufacturers of Galvanized Poultry Netting, and their quotation on this line to the general trade is discount 80 and 20 per cent.

Wire Cloth.—Buyers for next season are giving their attention to the market on Wire Cloth, negotiating with the manufacturers on the subject. It is as yet rather early for the making of prices on this line, and the developments of the next few weeks will be awaited with interest.

Wire Nails.—There continues to be a steady movement in Nails, and the volume of business is very satisfactory. It is, in fact, so large that most of the mills are kept fully occupied on orders, having little opportunity to accumulate stock. This is the case notwithstanding the fact that the trade as a rule are buying only to supply their present wants, not caring to stock up at present prices and take a chance of a decline. The market is feeling the effect of the efforts made by new concerns to secure business, who are making slight concessions of 5 to 10 cents on regular announced prices, both to the jobbing trade and to the larger retailers. This cutting gives some irregularity to the market. The irregularity in the price of Wire Nails from the mills has not affected the New York market, however, small lots from store being sold at \$2.60 per keg.

Cut Nails.—The demand for Cut Nails in the New York market keeps up to the usual proportions. Some merchants object to the Iron Cut Nails which are occasionally offered as a substitute for Steel Nails, on account of the scarcity of the latter. Cut Nails from store are quoted at \$2.18 to \$2.30 per keg.

Wire.—The demand for Plain Wire continues good, but not quite as heavy as some time ago. The season's trade has been very satisfactory to the manufacturers, the demand being very heavy and prices well sustained until recently. Plain Wire is retailed in New York at 2.60 cents and Galvanized at 3 cents.

Window Glass.—The demand for Window Glass is reported to be on the increase and jobbers' prices are being well maintained.

White Lead.—Favorable weather conditions have kept the demand for White Lead in Oil up to good proportions. Regular quotations remain unchanged, although there are reports of more or less irregularity in prices in some sections. White Lead in Oil is quoted in a retail way at 7 to 7¼ cents per pound.

Linseed Oil.—Crushers are slow in making deliveries of Linseed Oil contracted for October. The supply for prompt delivery is light, and these conditions are not expected to better themselves before the end of the month. City Raw Oil is quoted in moderate sized lots at 66 to 67 cents per gallon. Boiled Oil is 2 cents advance on Raw.

Spirits Turpentine.—Business in Turpentine is confined to small lots in this market, and the supply on hand is not large, but sufficient for present requirements. Retail quotations are 39 to 39½ cents per gallon.

TRADE NOTES.

THE INTERNATIONAL ALUMINUM MINING COMPANY of Pittsburgh, Pa., have been chartered by Mathieu Souvielle, Frank C. Harper and Frank N. McKelvy to mine bauxite.

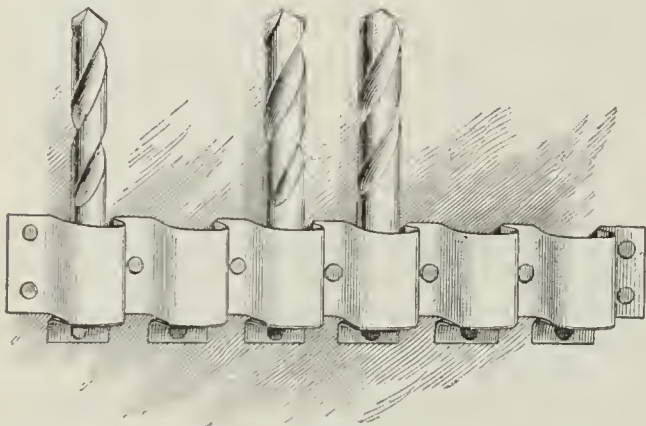
THE new foundry and machine shops of the Lewis Foundry & Machine Company, under erection for some time at Cornopolis, Pa., on the line of the Pittsburgh & Lake Erie Railroad, and about 10 miles from Pittsburgh, are nearly completed. The concern expect to occupy these new shops in a short time, and will then abandon their present plant on the South Side, which has become too small to accommodate their increasing business in

the mannfacture of Rolls and Rolling Mill Machinery of all kinds.

On the 17th inst. the stockholders of the American Brass Company voted to issue \$2,000,000 of stoek which was already created but had not been previously issued. Of this, \$1,425,000 will be for new properties. We are officially advised that the American Brass Company have purchased all of the capital stock and have assumed control of the Holmes, Booth & Haydens Company of Waterbnry, Conn. We are also advised that the Coe Brass & Mfg. Company of Torrington, Conn., who are an arm of the American Brass Company, have acquired the Chicago Brass Company. Owing to provisions in the charter of the American Brass Company, they cannot acquire properties outside of the State of Connecticut.

A Handy Drill Rack.

It is very usual to find a narrow strip of tin or leather tacked in loops on the wall of a shop to serve as a tool rack. A rack of this kind is easy to make, and is of considerable value as snpplying a place where tools can be kept. An improvement over the common form of tin rack is shown in the illnstration. It will be noticed that



A Handy Drill Rack.

in the center of each loop is an extension piece, which is bent under the loop and fastened to the wall, making a bottom to the socket.

This device is so simple that it might well be used in many shops as a means of promoting order. The rack shown is used for drills, which are arranged according to size, the smallest being placed at the left and the largest at right. The same scheme can be used with other tools to good advantage.

Attorney-General Sheets of Ohio has decided that the United States Steel Corporation are amenable to the Ohio law which taxes foreign corporations doing business in that State. He has investigated the matter and finds that the Steel Corporation own the majority of the stock of several constitnent companies, but do not own any of the plants in Ohio, and therefore are not subject directly to the tax. The constituent companies of the United States Steel Corporation, however, are liable to the tax, and will be forced to pay it.

In the United States District Conrnt at Buffalo, N. Y., on October 22, Judge Hazel handed down a decision for the defendants in an action by the Electric Smelting & Aluminm Company of Cleveland, Ohio, against the Pittsburgh Rednction Company of Niagara Falls, N. Y., for alleged infringement of a patent for cheaply separating aluminum by an electric process. Judge Hazel decided that no infringement of the patents of the plaintiffs had been made by the defendants. This decision is of great importance, as it confirms the Pittsburgh Reduction Company in their virtual monopoly of the manufacture of aluminum in the United States.

WARREN G. PARSONS, John and Church streets, Hoosick Falls, N. Y., who has dealt in House Furnishing Goods, Hardware, Stoves and Ranges for the past

30 years, announces that he is carrying a complete stock of everything required in these lines, with every facility for rendering his customers prompt and efficient service.

M. J. KELLY has entered the retail Stove and Fnrnace business at 51 Bridge street, Ansonia, Conn.

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Amer. Sheet Steel Co., New York.

Iron Shutters and Doors.

Garry Iron & Steel Co., Cleveland, O.

Lath, Metallic.

Schrawtweisers Metal Lath Works.

Lead Pipe.

Colwell Lead Co., 63 Centre St., N. Y.

Lightning Rods.

Washburns, E. G. & Co., 46 Cortlandt St., N. Y.

Lunch Boxes.

Seavey Mfg. Co., Boston, Mass.

Manufacturing Sites.

Chamber of Commerce, Muskegon, Mich.

Metal Ceilings. (See Ceilings, Metallic.)**Mica.**

Asheville Mica Co., Asheville, N. C.

Munsel, Eugene & Co., 218 Water St., New York.

Ohio Mica Co., Canton, Ohio.

Palermo Mica Co., 115 Beekman St., N. Y.

Milk Cans.

National Enameling & Stamping Co., 78 Beekman St., N. Y.

Nickel Plating Outfits.

Hanson & Van Winkle Co., Newark, N. J.

Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.

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Howes, S. M. Co., Boston, Mass.

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Connors, Wm. Paint Mfg. Co., Troy, N. Y.

Patent Solicitors.

Hamlin, G. R., Washington, D. C.

Howson & Howson, Philadelphia, Pa.

Stocking, E. B., Washington, D. C.

Patterns.

Cope, Geo. W., Detroit, Mich.

Gobellie Pattern Co., Cleveland, Ohio.

Vedder Pattern Wks., Troy, N. Y.

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Harrington & King Perforating Co., Chicago, Ill.

Plg Iron.

Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Couplers.

Stevens, J. & E. Co., Cromwell, Ct.

Pipe Cutting and Threading Machines.

Livermore, H. F., Boston, Mass.

Pipe, Water and Gas.

Millar, C. & Son Co., Utica, N. Y.

Pipe Fittings.

Vanderman Plumbing & Heating Co., Willimantic, Conn.

Pipe Joints.

Escabrook's Sons, R. Boston, Mass.

Pipe Joint Cement.

Callahan, Geo. & Co., 218 Front Street, N. Y.

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Lamb & Ritchie, Cambridge, Mass.

Pipe Wrenches.

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Estabrook's Sons, R. Boston, Mass.

Foster, F. W. Mfg. Co., Boston, Mass.

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Stover Mfg. Co., Freeport, Ill.

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- Miner & Peck Mfg. Co.,** New Haven, Conn.
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Taylor, N. & G. Co., Philadelphia, Pa.
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Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummev, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

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Shot.
Colwell Lead Co., 68 Centre St., N. Y.

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Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.

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Salt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Olson Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., N.Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummev, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Maurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.
- Steam and Water Engineering and Regulating Specialties.**
Kleley & Mueller, 7-11 West 13th St., N. Y.

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Sackman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.

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Ayling Bros., Chicago, Ill.
Hoffman, Geo. W., Indianaapolis, Ind.
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Cope, G. W., Detroit, Mich.
Gobellie Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.
Obeney, S. & Son, Manlius, N. Y.

Stove Repairs.
Brauer, A. G., St. Louis, Mo.
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Donaldson, O. G. & D. H., Buffalo, N.Y.
Hessler, H. E. Co., Syracuse, N. Y.
Hovess, S. M. Co., Boston, Mass.
Kramer Bros., Dayton, O.
Magoon, A. J. & Son, Providence, R. I.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.
Union Stove Repair Co., Chicago, Ill.

Stove Trimmings, &c.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Hessler, H. E. Co., Syracuse, N. Y.
Hovess, S. M. Co., Boston, Mass.

Stoves and Ranges.
Artistic Enameling Works, St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
- Bergstrom Bros. & Co.,** Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Boynston Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Buckwalter Stove Co., Royersford, Pa.
Champion Steel Range Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dixton Furnace Co., Taunton, Mass.
Eclipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
Floyd Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Galusha Stove Co., Rochester, N. Y.
Giblin & Co., Utica, N. Y.
Gurney & Co., Boston, Mass.
Keeley Stove Co., Columbia, Pa.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Richmond Stove Co., Norwich, Conn.
Schill Bros. Co., Crestline, O.
Shoemaker, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Adler H. Co., Pittsburgh, Pa.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Economy Stove & Mfg. Co., Detroit, Mich.

Stoves and Ranges, Oil, Vapor and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Hessler, H. E. Co., Syracuse, N. Y.
Keeley Stove Co., Columbia, Pa.
Taylor & Boggis Foundry Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

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Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. O. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
- Peck, Stow & Wilcox Co.,** 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummev, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Maurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. W., Boston, Mass.
Saunders, D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Trade Schools.
New York Trade School, First Ave., 6th and 68th Sts., New York.

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Crosby Steam Gate & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Maurer Bros. Co., Brooklyn, N. Y.
Rosen, D. J., 489 Canal St., N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closers.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N.Y.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

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THE METAL WORKER.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A good first-class TINNER; one who thoroughly understands his business inside and outside; \$2.75 per day and nine hours; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Oct. 26

A New York stove house wants a high grade SALESMAN for New York City and vicinity for 1902; must have acquaintance and highest credentials; a liberal salary will be paid to the right man. "High Grade," care *The Metal Worker*, New York. Oct. 26

One good SLATER and SHEET METAL WORKER; good job for right man. The Peet & Schuster Company, Springfield, Ohio. Oct. 26

Several good TINSMITHS, CORNICE WORKERS and SLATE ROOFERS; good wages for nine hours' work. H. E. Wieber, Rondout, N. Y. Oct. 26

A first-class TINNER; one capable to make pipes for blowers, &c. S. W. Damon, 367 Main street, New Britain, Conn. Oct. 26

A traveling SALESMAN of experience and acquaintance for New York, Pennsylvania and New Jersey to sell hotel French ranges and cooking apparatus to hotels and public institutions; give full particulars, reference and wages wanted; correspondence strictly confidential. "French Range," care *The Metal Worker*, New York. Oct. 26

A steady position at good fair wages to a TIN and SHEET IRON WORKER; none but a thorough workman on general jobbing need answer; A1 job for a reliable man. "Reliable," care *The Metal Worker*, New York. Oct. 26

SHEET IRON WORKER; one who can work from plans and do jobbing work; must be familiar with the stove and leader pipe, making systems; a good opening and steady position to right party; state requirements. "Brooklyn," care *The Metal Worker*, New York. Oct. 26

Competent TINNER, sober and active, understanding the making of elbow, casings and the setting of furnaces; best wages. "Engine," Box A, Ashtabula, Ohio. Oct. 26

Three or four good general SHEET METAL WORKERS; good wages and steady work all year round; men that can slate preferred, and one that can get out cornice from full size detail. Box 1, Station A, Chattanooga, Tenn. Oct. 26

At once, four CORNICE and SKYLIGHT MAKERS for in and outside work. Robert C. Reetz, 17 Dexter street, Pawtucket, R. I. Oct. 26

At once, a good sober, strictly first-class TINNER; one capable of doing inside and outside tin and galvanized iron work; must be experienced in cornice work; not over 40 years old; a steady job to the right man at \$3 per day and nine hours' work. F. P. Nickey, Santa Ana, Cal. Oct. 26

A New York stove house wants a young man ASSISTANT IN OFFICE WORK; must have experience and present good credentials. "Assistant," care *The Metal Worker*, New York. Oct. 26

Wanted to correspond with a man who understands the hardware business, and has some money to invest in a stock company; this is a good opening for the right man; references given and required. "R.," care *The Metal Worker*, New York. Oct. 26

At once, PLUMBER and STEAM FITTER; good job to a sober and reliable man. O. S. Densmore, Springfield, Vt. Oct. 26

A good all around mechanic; one who can do plumbing, steam and hot water heating, tin, sheet iron and furnace work; state age and wages expected. C. B. Jacobs & Son, Hollidaysburg, Pa. Oct. 26

A good PLUMBER and STEAM FITTER; one that can take charge; steady work and good wages paid to the right party. F. J. Doyle Tinning & Plumbing Works, Windber, Pa. Oct. 26

Six CORNICE MEN at once. W. F. Overly, Greensburg, Pa. Oct. 26

Good TINSMITH wanted; good wages for good man. Tracy Bros., Ballston Spa, N. Y. Oct. 26

Wanted to employ steadily a sober PLUMBER that has some knowledge also of tin work; correspondence solicited. J. H. Jones, 414 East Main street, Streator, Ill. Oct. 26

We have two specialties for New York State trade, a new square parlor stove and new modern oak stoves; inducements prominent; we want capable SALESMAN for this territory. "New York State," care *The Metal Worker*, New York. Oct. 19

An old established retail stove, furnace and house furnishing goods house in Eastern New York State are looking for a first-class SALESMAN for on the floor; must have experience and come well recommended. "Retail," care *The Metal Worker*, New York. Oct. 19

Two TINNERS and SLATERS; good wages, steady work. P. H. Bayley, Sidney, Ohio. Oct. 19

A good BRASS and COPPER PLATER please correspond. Ohio Foundry Company, Steubenville, Ohio. Oct. 19

A first-class TINNER; one who is used to furnace work; wages, \$2.50 a day. Holles & O'Donnell, Cranford, N. J. Oct. 19

Young German-American about 28 years of age who can speak and write German, with thorough knowledge of bookkeeping, for manufacturing company abroad. "American Manufacturer," care *The Metal Worker*, Chicago. Oct. 19

A practical CUPOLA MAN to take full charge of 75-ton cupola located in New York State; steady work; state age and wages expected; send letters of recommendation from former or present employer; American preferred. "Cupola," care *The Metal Worker*, New York. Oct. 19

CORNICE and SKYLIGHT MAKERS; will pay good wages for good men; none others need apply; eight hours; come ready to go to work. The G. Drouve Company, Bridgeport, Conn. Oct. 19

Two or three competent, first-class TINNERS wanted at once at permanent work the year round; must be sober and reliable; none need apply who are not worth at least \$1.50 per day. W. H. Ferber, secretary of the New London Hardware Company, New London, Wis. Oct. 19

At once, a PLUMBER and TINSMITH; will pay \$2.50 per day; steady work to a good, sober man that can do my work; do not write if you can't come at once. Geo. W. Gibney, Pawling, N. Y. Oct. 19

A good TINSMITH and SHEET METAL WORKER for inside and outside work and general jobbing; a steady position to the right man. Bowen Bros., Utica, N. Y. Oct. 19

TINSMITH and FURNACEMAN wanted at once; put up furnaces, make furnace trimmings, put up stoves; very little roofing done; apply at once. Matern Stove & Furnace Company, Sandusky, Ohio. Oct. 19

First-class NICKEL PLATER; a man competent and one who has had charge of nickel department of a stove plant; there is position open for strictly capable man. "Metal," care *The Metal Worker*, New York. Oct. 19

FOREMAN TINNER with experience in tinning all kinds of sheet malleable and wrought iron and able to take charge of tinning room; write stating experience. "Foreman Tinner," care *The Metal Worker*, New York. Oct. 19

First-class CORNICE MAKERS wanted at once; apply to Williams & Manogue, foot of Grand street, Troy, N. Y. Oct. 19

We want at once one TINSMITH and one PLUMBER. Carr & Spaulding, Newport, Vt. Oct. 19

First-class STEAM and HOT WATER FITTERS, PLUMBERS and TINSMITHS wanted at once; men who understand all branches preferred; good wages paid. J. H. Yates & Son, Matteawan, N. Y. Oct. 19

At once, two first-class CORNICE and SKYLIGHT WORKERS for in and outside work; no foreman wanted. Robert C. Reetz, Pawtucket, R. I. Oct. 19

At once, three nonunion PLUMBERS; must be strictly sober and reliable. Helena Tin & Plumbing Company, Helena, Ark. Oct. 19

SITUATIONS WANTED.

BOOKKEEPER; aged 30; single; thoroughly experienced in manufacturing line; up to date methods; all around man; capable of taking charge of office; exceptional references; salary required, \$20 per week. "Bookkeeper," care *The Metal Worker*, New York. Oct. 26

By a young man with two and one-half years' experience at plumbing and gas fitting, would like a steady position; city or country; best of reference; state wages. "W. L. R.," 8 Maple street, Natick, Mass. Oct. 26

As TRAVELING SALESMAN to represent some good house in plumbers' supplies, or metal house in metal supplies, January 1 or sooner; will furnish good reference, and will go where wanted. "Clinton," care *The Metal Worker*, New York. Oct. 26

A METAL PATTERN MAKER, FILER and FITTER wants a job; is sober and industrious. "J. M. D.," 42 Bradford street, Auburn, N. Y. Oct. 26

Parties desiring the services of an all around PLUMBER, TIN and SHEET IRON WORKER, FURNACE MAN and JOBBER, can hear of one by addressing H. Dearborn, General Delivery, Chelsea Post Office, Mass. Oct. 26

Engagement wanted by a thoroughly, practical SHEET IRON WORKER, ESTIMATOR and CUTTER in skylights, cornices, ventilating, roofing, jobbing, light iron construction, &c.; can handle men to advantage; or will advance money and take an active interest in business in a live town, where business can be increased by push and perseverance. D. V. Brown, General Delivery, New York. Oct. 26

PLUMBER wishes work; city or country. Thos. McSpedon, 328 East Sixtieth street, New York. Oct. 26

PLUMBER, licensed, handy at range, furnace and heater work, desires steady job; can estimate and do all work personally; sober and reliable. "J. M. L.," care *The Metal Worker*, New York. Oct. 26

TINNER; 15 years' experience in inside and outside job work and assortment; sober and reliable; references if required; at liberty November 1, 1901. E. S. Grove, room C, Sturges Block, Mansfield, Ohio. Oct. 26

By a practical man a position to represent a tin and sheet metal house or tinner and plumber supply house or stove company in California; has been there and is acquainted with the trade; can furnish first-class references; would go there and locate permanently if house so desired. For further particulars, address "Pacific Coast Salesman," care *The Metal Worker*, New York. Oct. 26

By experienced sheet metal, cornice and skylight worker as ESTIMATOR, FOREMAN or DRAFTSMAN. "Experienced," care *The Metal Worker*, New York. Oct. 26

In a cornice shop by a practical man to assist in estimating and cutting; willing to work at the bench. "O. K.," 765 De Kalb avenue, Brooklyn, N. Y. Oct. 26

PLUMBER, GAS, STEAM and HOT WATER FITTER; 20 years' experience; can and has taken charge of shop; estimating; thoroughly understands plans and specifications; city or country work; lay out any size job; sanitary work up to date (Durham system); can control any construction of heating system by steam or hot water; can handle mechanics to advantage; city of New York preferred or nearby. "Lafayette," care *The Metal Worker*, New York. Oct. 26

By young man as CUTTER and WORKING FOREMAN in cornice and sheet iron shop; do not answer this unless you want a good man and willing to pay fair wages. "E. L.," 138 Prospect street, Newark, N. J. Oct. 26

Position as TRAVELING SALESMAN or SUPERINTENDENT for a sheet metal manufacturing concern; can estimate from plans, make my own details, am a fair draftsman and can handle men to advantage; my specialties are galvanized iron, cornice and skylight work; am connected at present with one of the best firms of this kind in the United States; can give best of references; prefer Southern or Western territory; will be open for position January 1, 1902. "Adam," care *The Metal Worker*, New York. Oct. 26

On the road to represent some good metal house, tin plate and tinner's supplies; Southern territory; now or January 1; have a good knowledge of the metal business; can furnish any reference desired. H. S. Nance, formerly of Timberlake & Nance, Huntsville, Ala. Oct. 19

By a practical PLUMBER, STEAM and HOT WATER FITTER able to estimate on and carry through any size job; can make plans and specifications; has had several years' experience in soliciting work, &c.; can handle men and take general supervision; can furnish good references; willing to go anywhere in New England or Middle States. "Hustler," care *The Metal Worker*, New York. Oct. 19

A practical STOVE and FURNACE MAN; one who thoroughly understands the business and has a very large acquaintance with the stove and furnace dealers; is open for an engagement with some first-class house. "S. & F.," care *The Metal Worker*, New York. Oct. 19

At once, by a young man as TINNER; good at general job work; temperate, reliable and honest; six years' experience. Box 134, Waterman, Ill. Oct. 19

FOR SALE.

MANUFACTURING BUSINESS.

Manufacturing a first-class and up-to-date line of Gas Stoves, Hot Plates, Gas Heaters and Appliances. Address

**MILWAUKEE
GAS STOVE CO.,**
Milwaukee, Wis.

FOR SALE.

Second-hand Tinsmiths' Tools cheap.
ARCHIE E. RODERICK,
Farmington, Maine.

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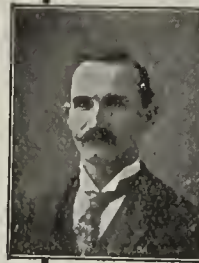
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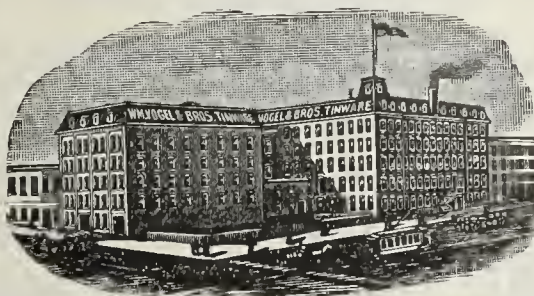
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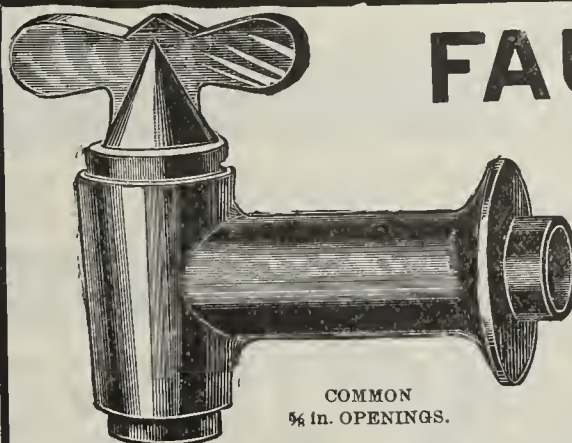
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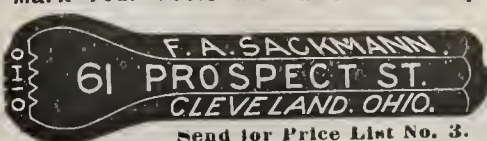
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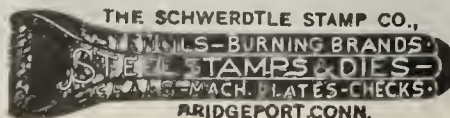
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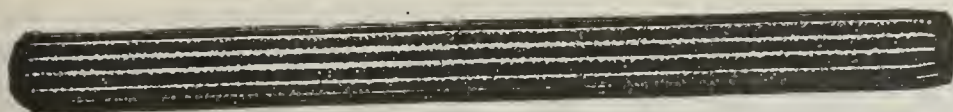
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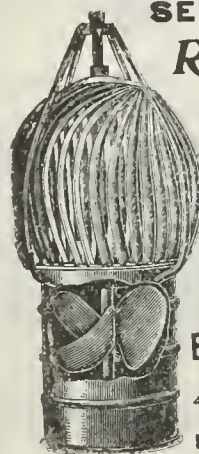
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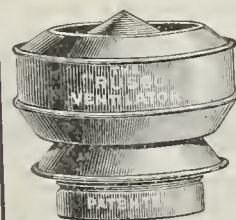


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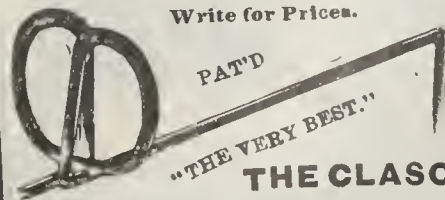


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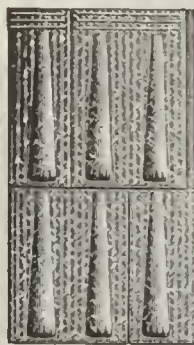
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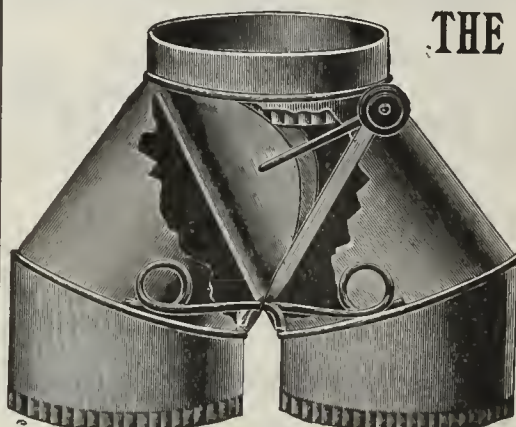
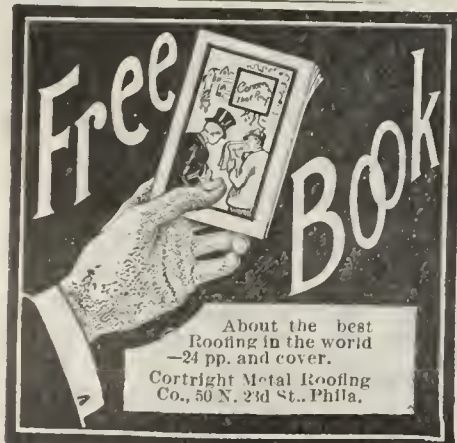
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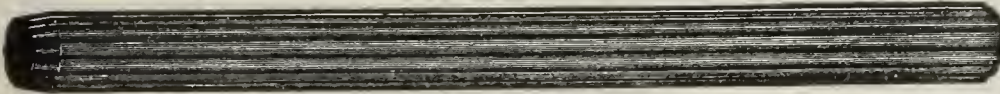
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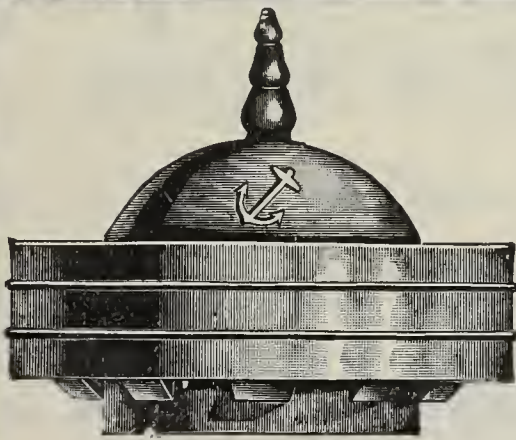


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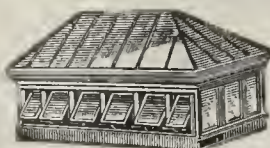
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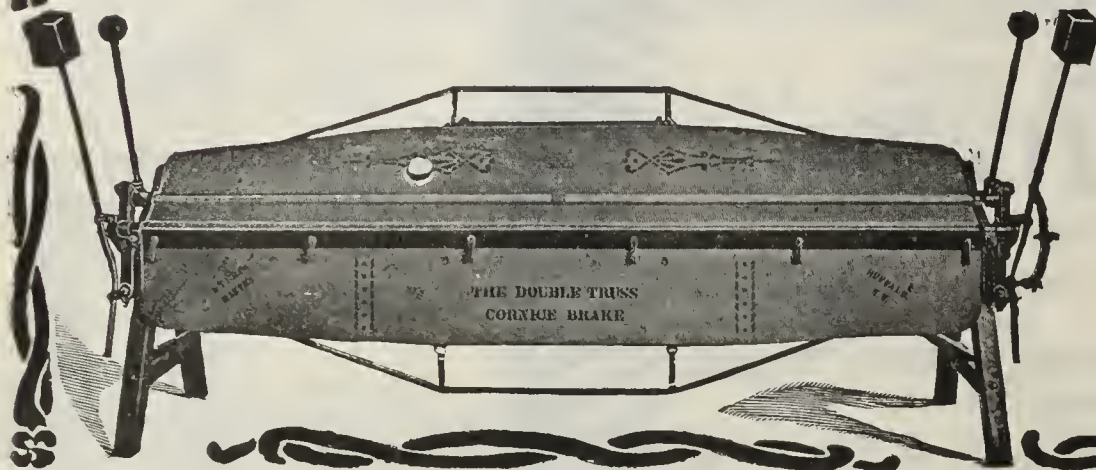
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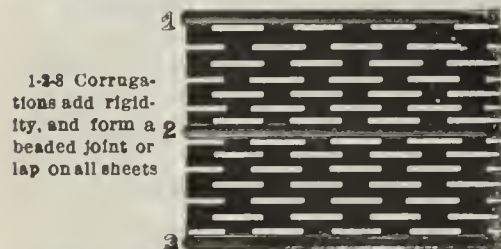
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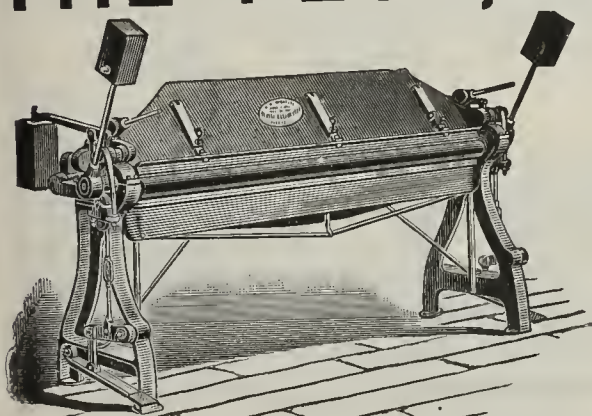
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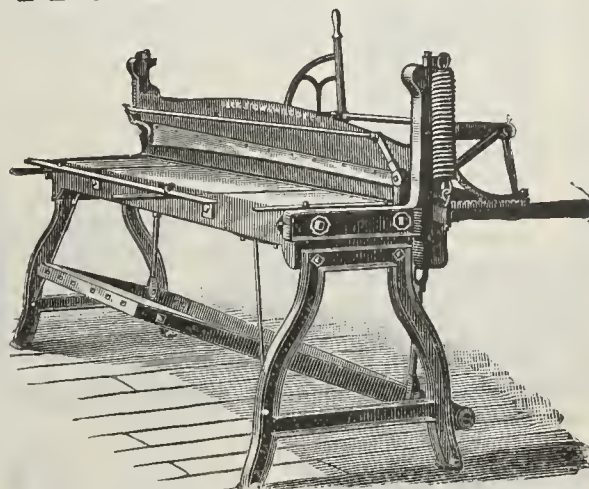
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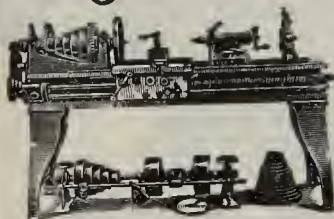
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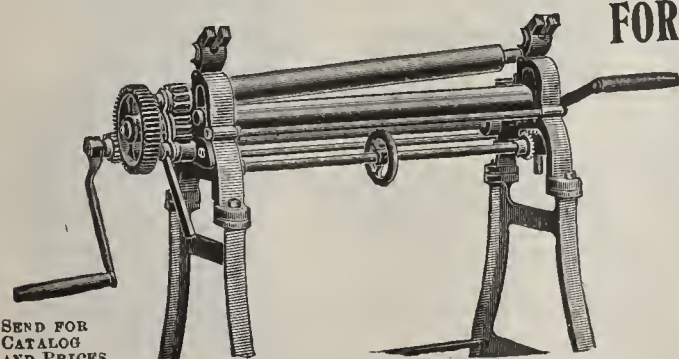
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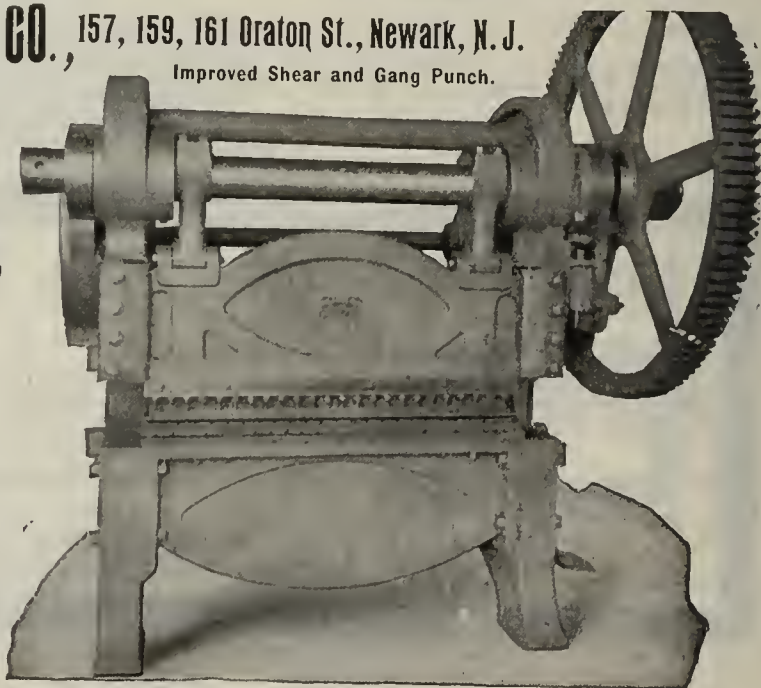
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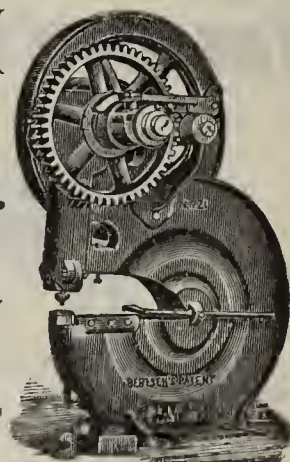
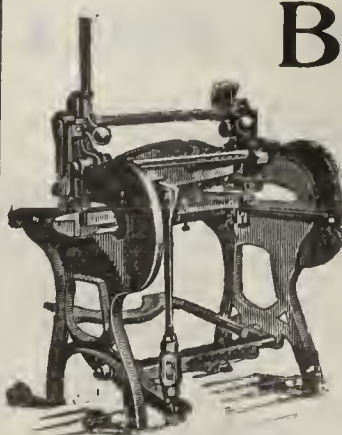
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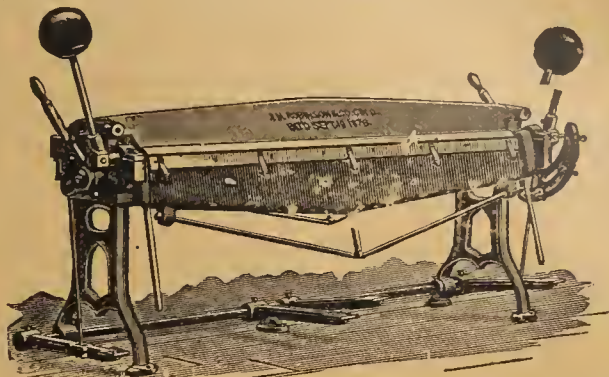
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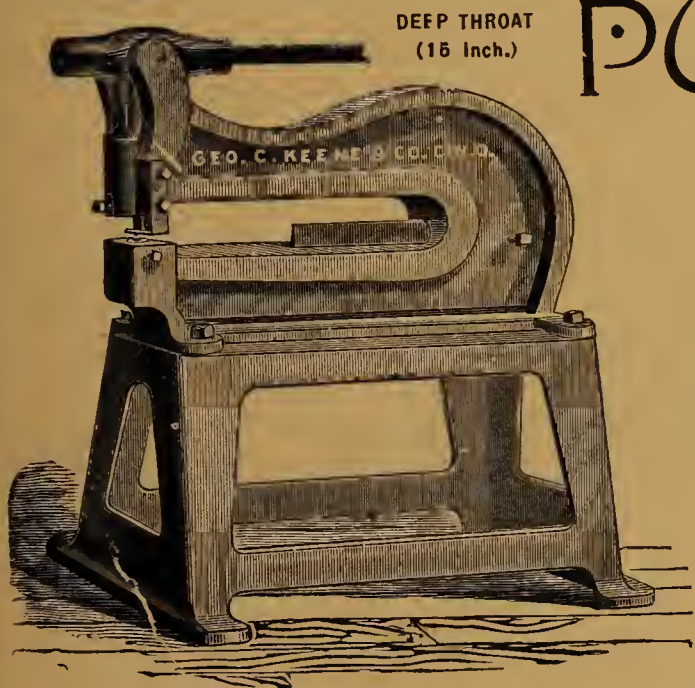
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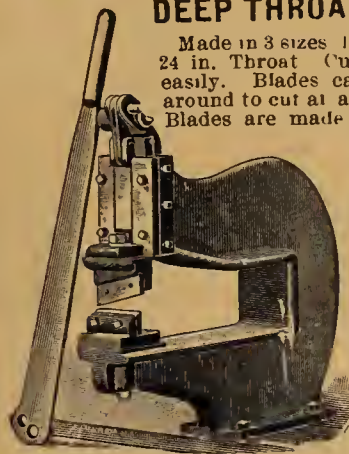
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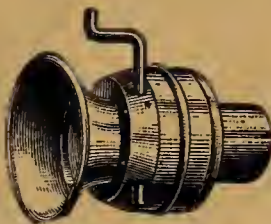
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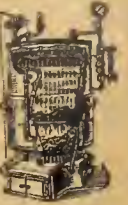
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 our best manufacture,
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READ OUR "AD"
Page 13.
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We believe
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and
Furnace work
cannot be
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We believe the
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comprehending
a perfect job—
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Then the cost
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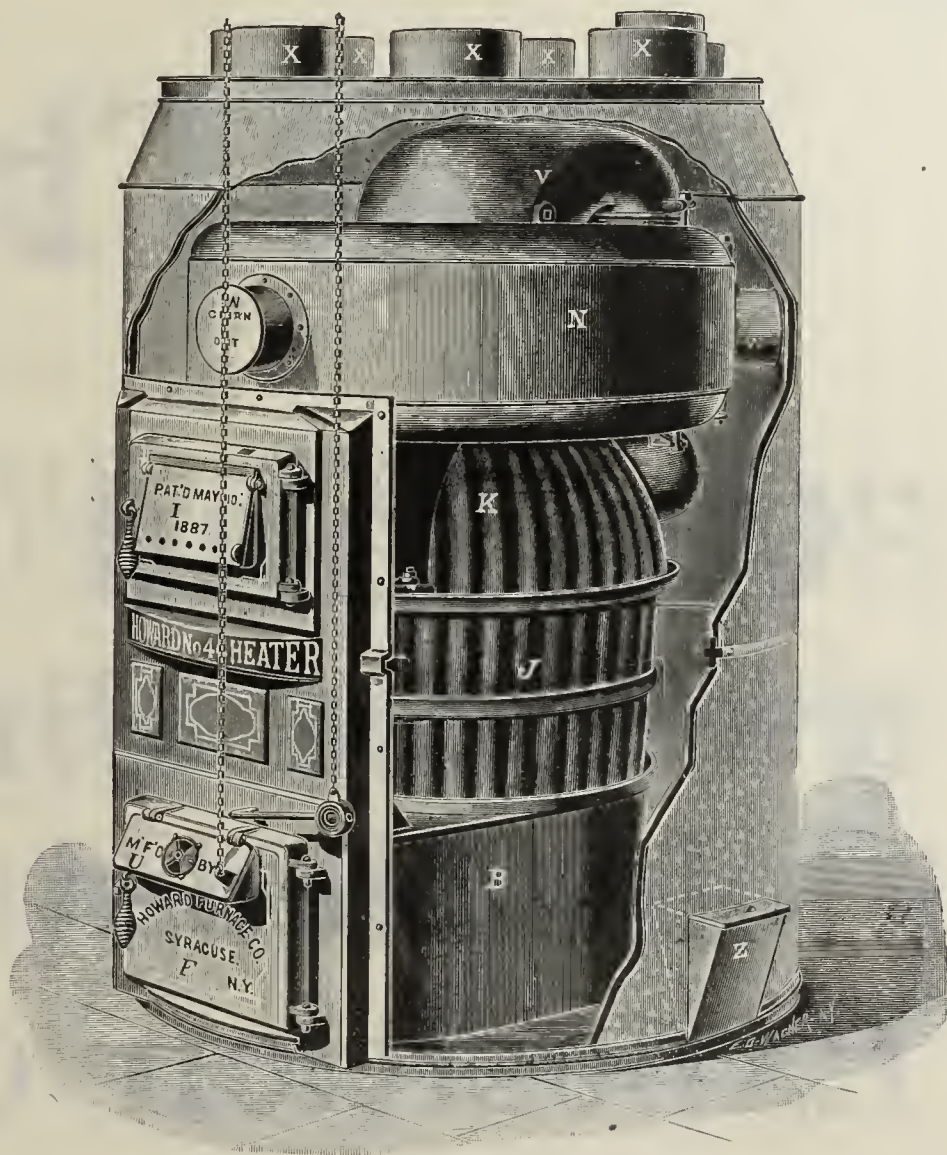
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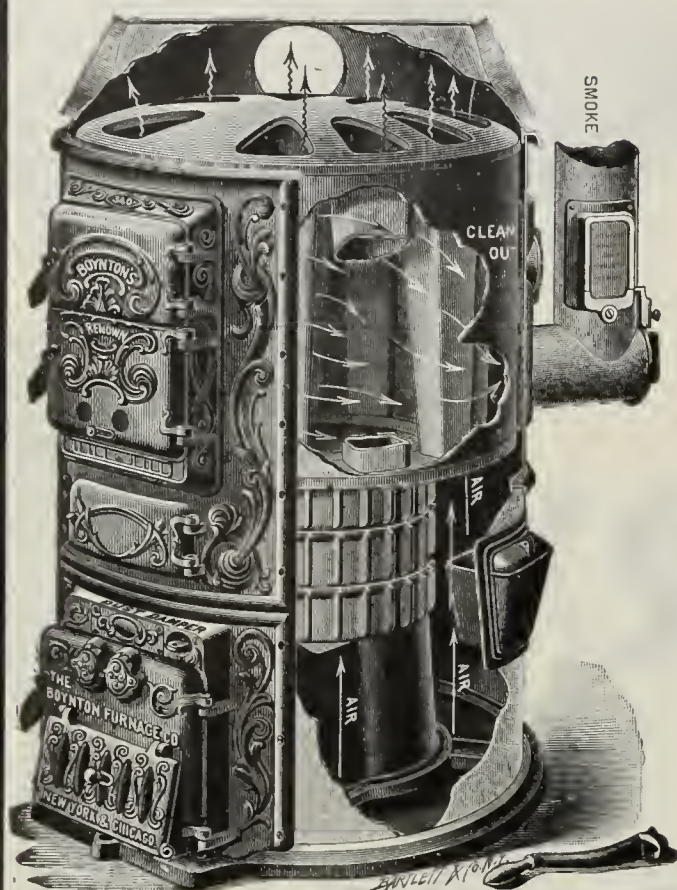
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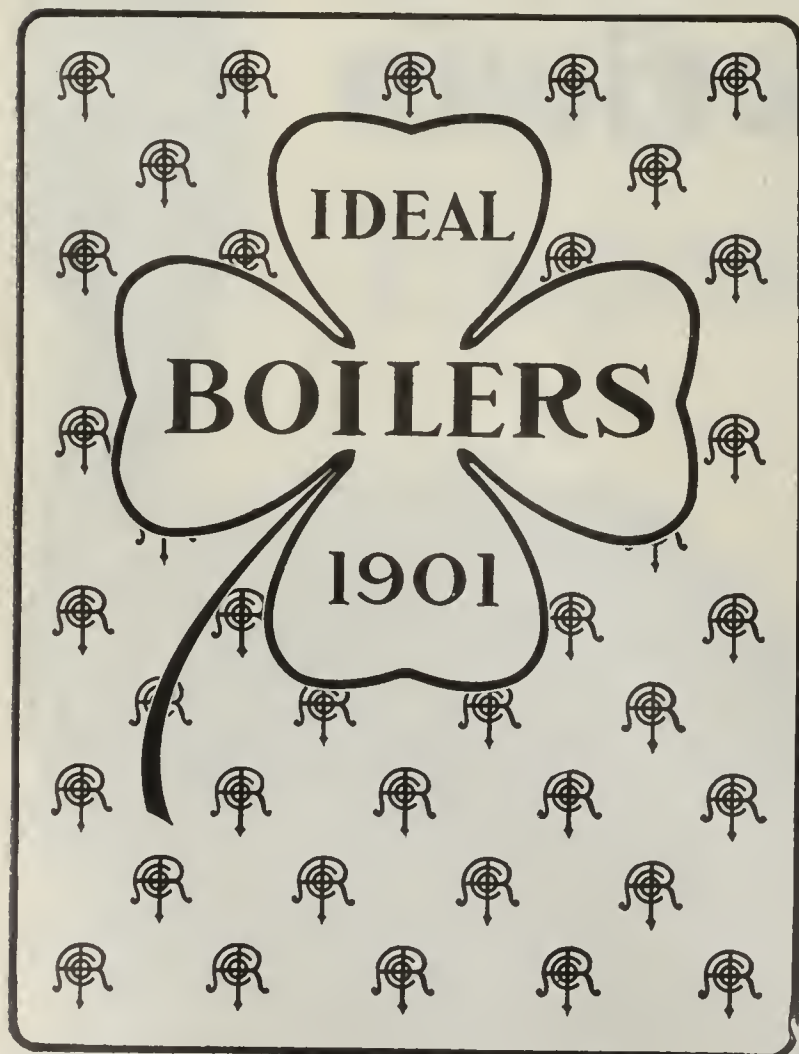
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Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

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A deep firebox; plenty of fire surface, large easily cleaned flues; low ratings and prices.

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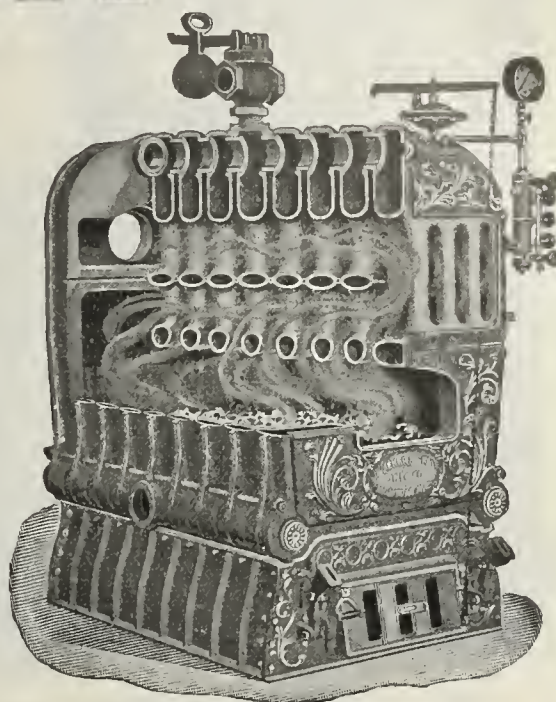
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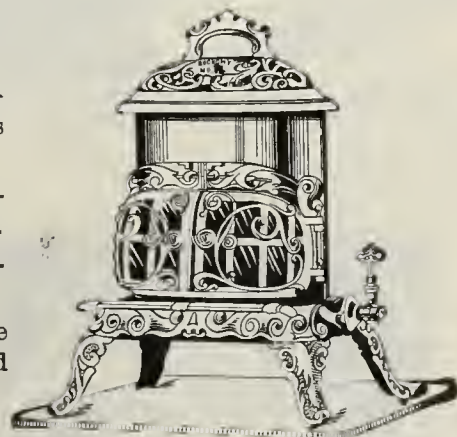
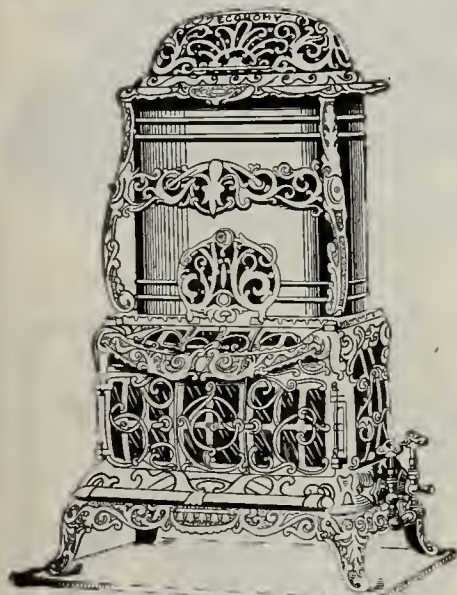
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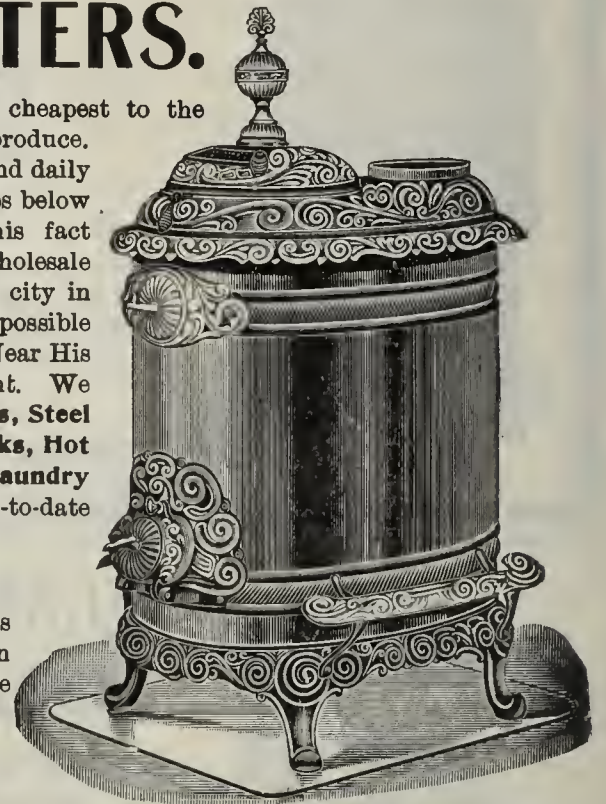
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To all who are interested in flues
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stoves, furnaces and house heating ap-
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	Page.
POINTS ON CHIMNEYS	7-32
An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES	33-35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.	
HOW TO IMPROVE A WEAK CHIMNEY	36-40
VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
CONNECTED FLUES DESTROY DRAFT	52-55
FAILS TO BAKE ON BOTTOM	56-62

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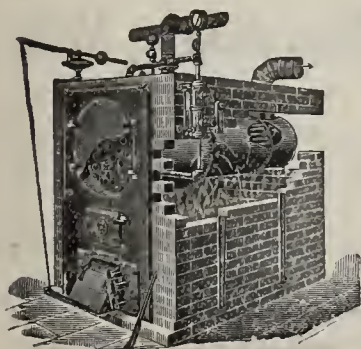
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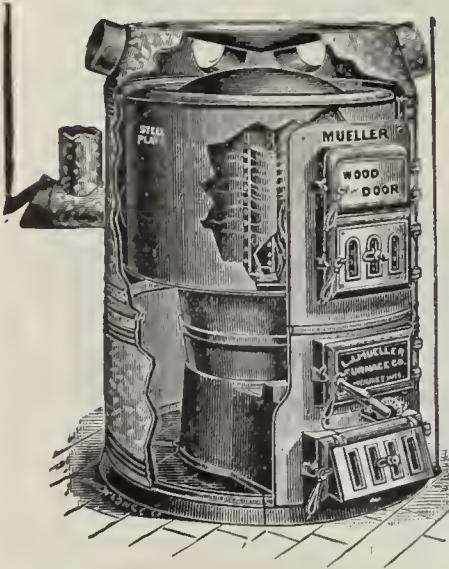
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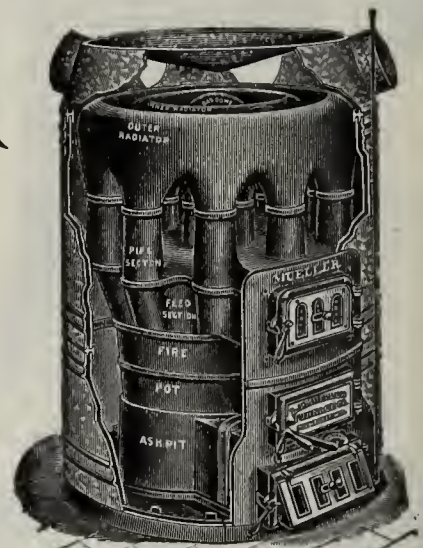
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Our Heaters are made in all sizes and for
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EVERYTHING IN THE HEATING LINE.

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THE Mogul Furnace

Diameter of fire pot.	19 1/4 inches.
Height to top of elbow	56 "
Height to bottom of pipe collar	46 "
Diameter of ring where casing fits	31 1/2 "
Weight	800 pounds.

It is made with regular furnace joints for cement from the bottom up; also provided with draw center anti-clinker grate, which can be taken out and replaced through the ash pit. The fire pot has fingers at the bottom on the inside to assist in grinding up the cinder and cleaning the fire. A heavy cast iron elbow and cast ring for casing and one cast iron water pan is sent with each furnace. The "Mogul" is cheaper to operate than a hard coal base burner and will heat the house. It is plain, heavy and will do the work of, and outlast many of the furnaces on the market costing twice the money. Get our prices.

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MORLEY BROS., Saginaw, Mich.,
Agents for Northwest.



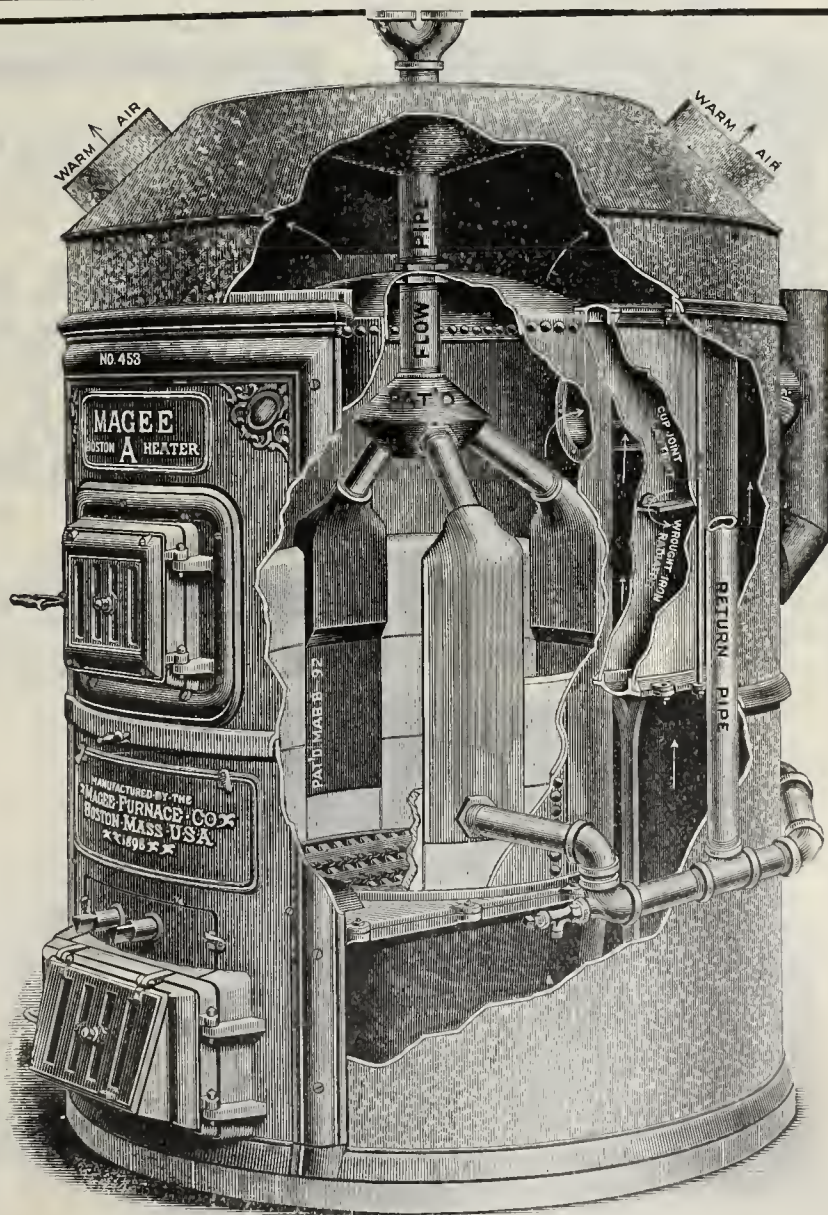
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When you have out-of-the-ordinary houses that look like they'll be difficult to heat, advise the use of the

MAGEE BOSTON HEATER

Warm Air and Hot Water in Combination. You may depend upon its doing the work. Use it in large houses, particularly with large glass exposure, or with out-of-the-way rooms that may be difficult to reach with warm air. Heat principal rooms with air; those remote from heater or specially exposed, with water. You'll solve the problems of heating under severe wind-pressure and through long or crooked pipes. You'll secure thorough ventilation and a greater saving in fuel than by any other system of indirect heating.

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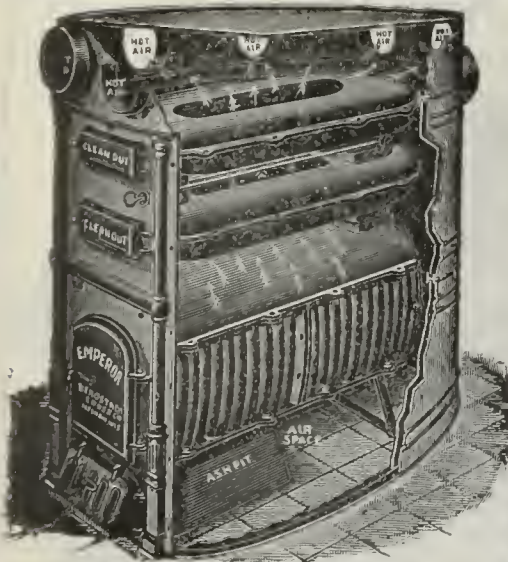
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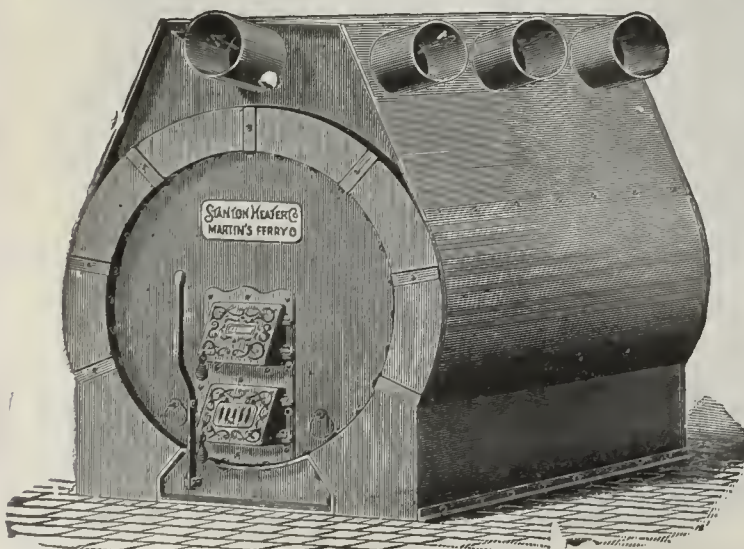
Yours truly, DR. L. W. STRUBLE.

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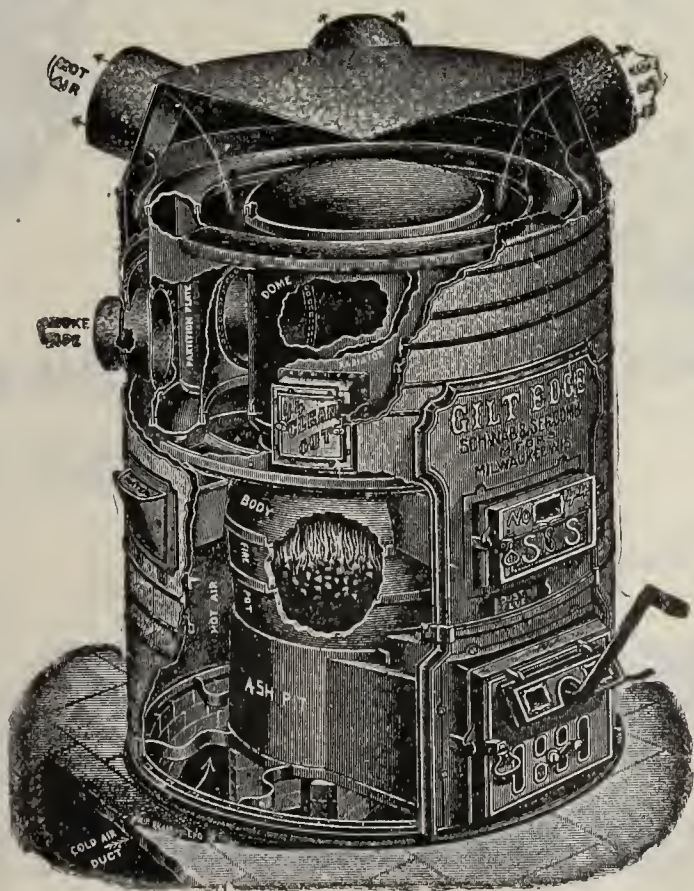
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Combination Heaters

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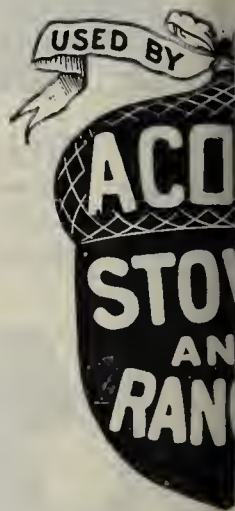
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EASY TO

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"THE OLDEST AMERI

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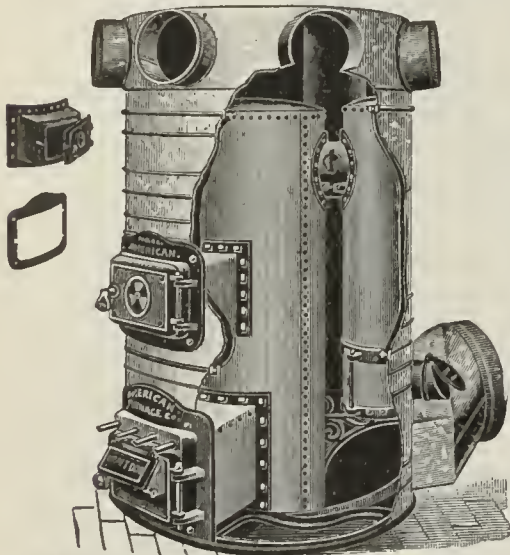
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Burn Hard or Soft Coal, or Coke. Large Doors.

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Has come to us through watching the doings of dealers throughout the United States.

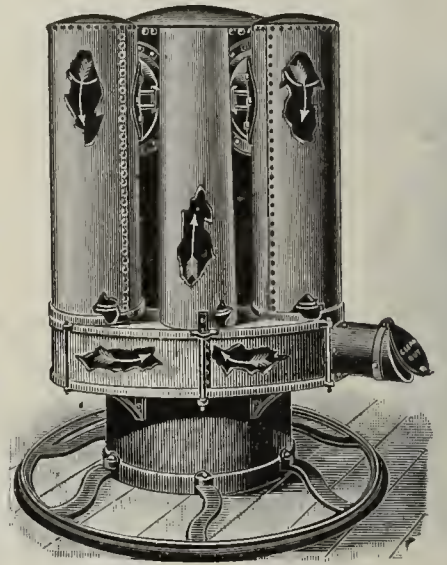
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On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

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Large Radiators, easy to clean out.

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THE HEAVIEST STEEL FURNACE MADE.

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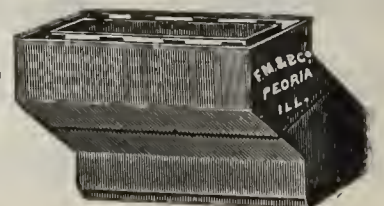
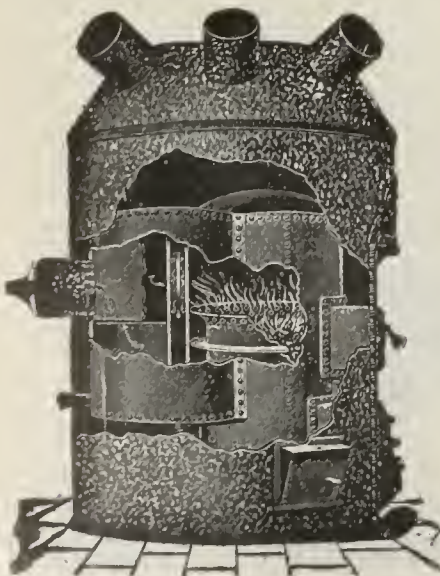
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ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick

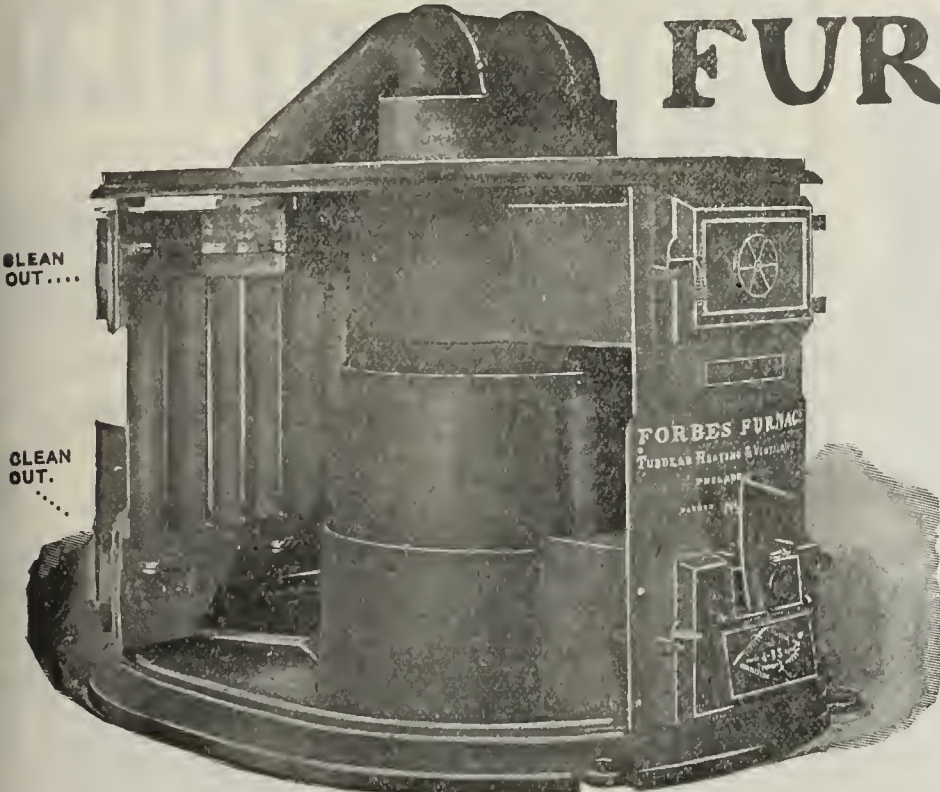
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PERFECT SHAKING.

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Each Bar can be separately replaced.



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Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

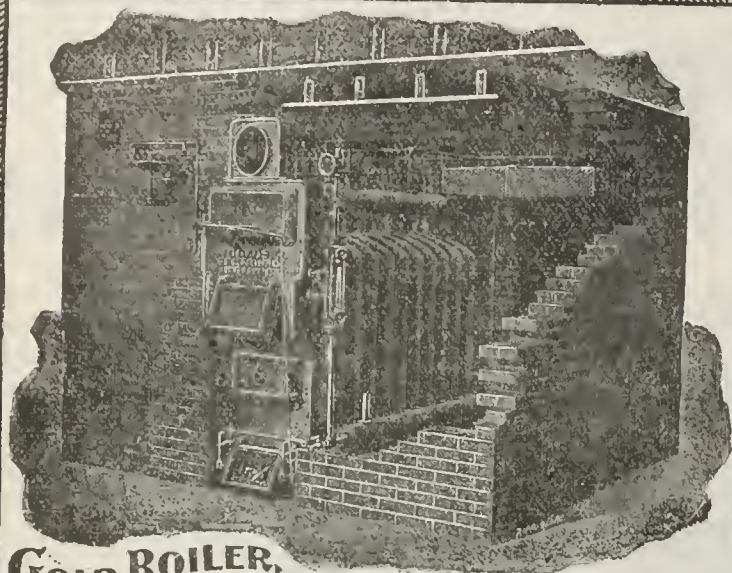
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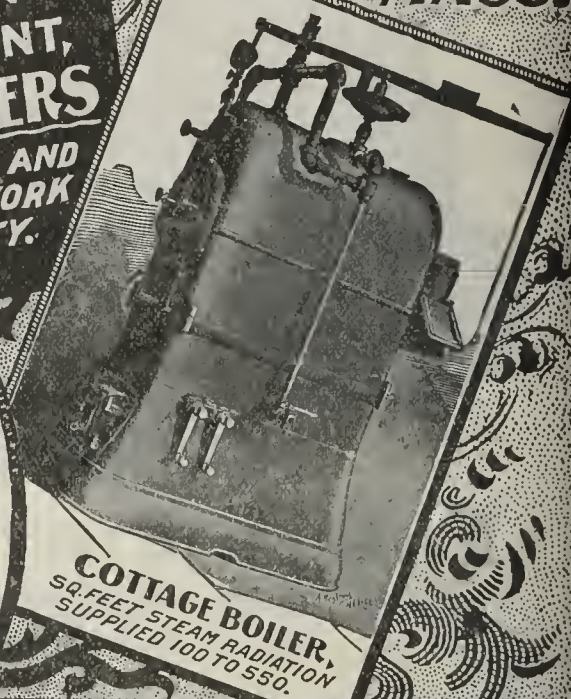


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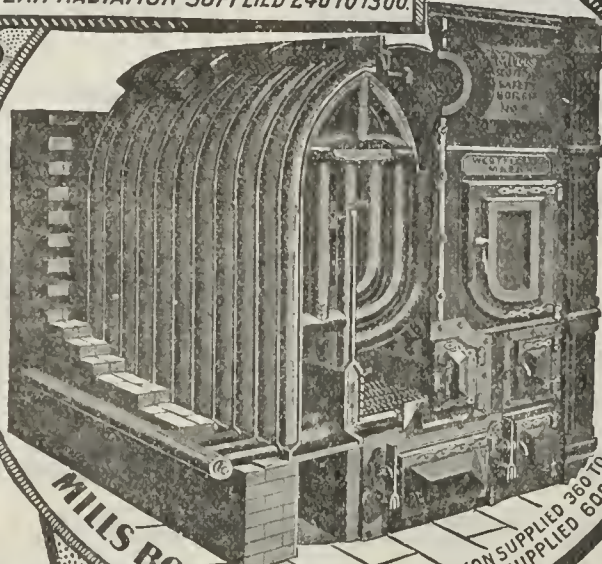
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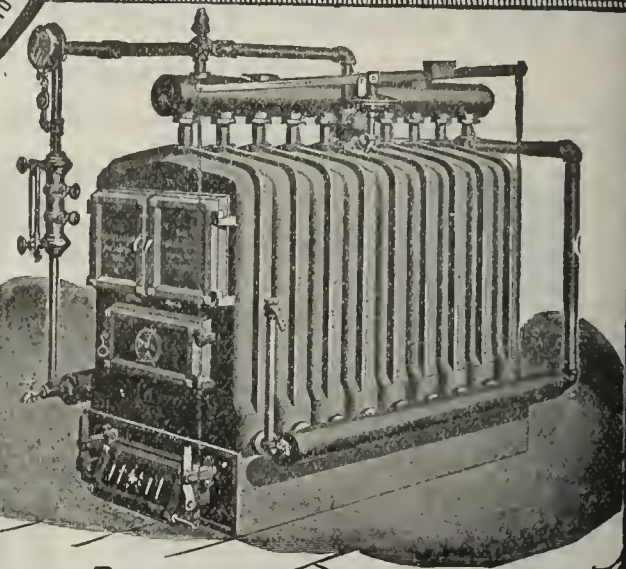


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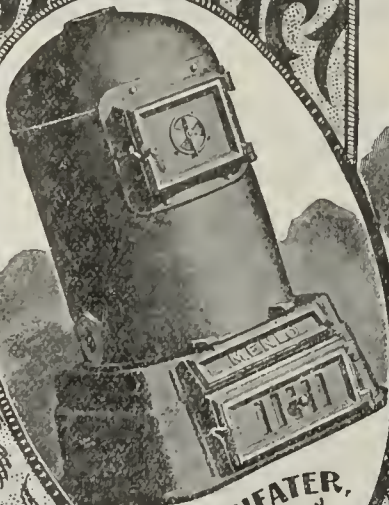
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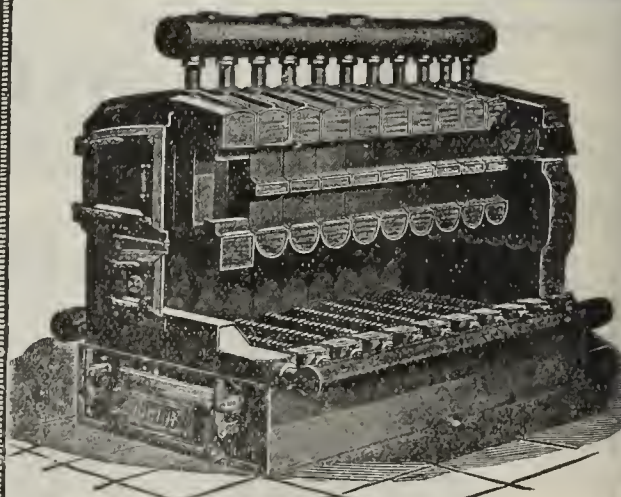
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No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.
19	20 inches	51 inches	36 inches	\$40 00	\$8 00
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23	24 "	51 "	42 "	60 00	11 50
25	26 "	53 "	46 "	70 00	14 00
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The No. 19, 20 inch fire pot, we sell at about the price you would pay for other good furnaces having a 17 or 18 inch pot.

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A Marvelous Seller.

Will automatically turn on the draft of any furnace, steam or hot water boiler.

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The **THREE** requirements for a first-class furnace are **ALL** incorporated in the

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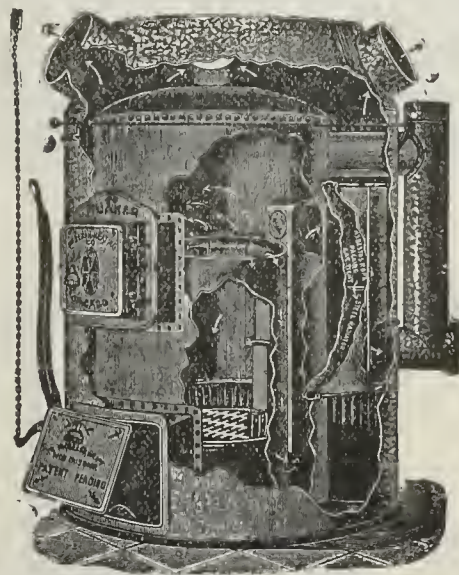
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ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and **ECONOMY** in REPAIRS.

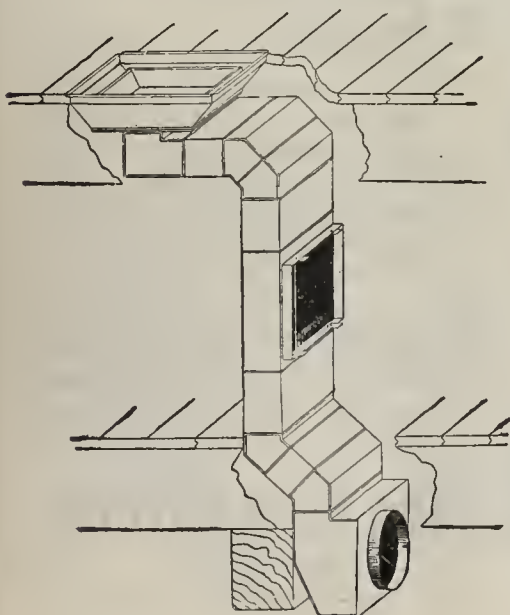
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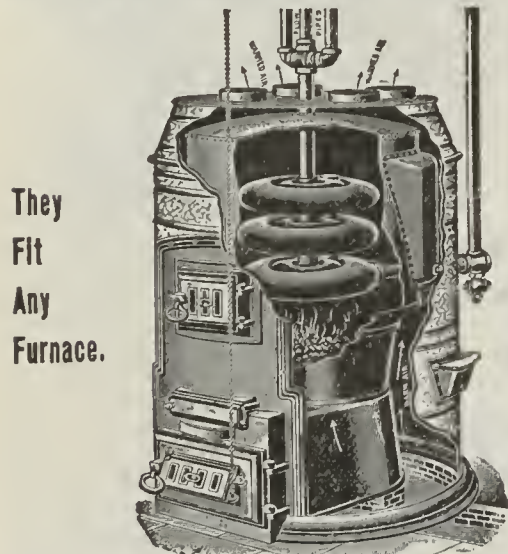
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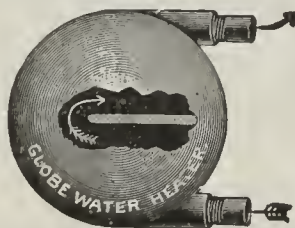
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These Boilers are made in three sizes diameter,
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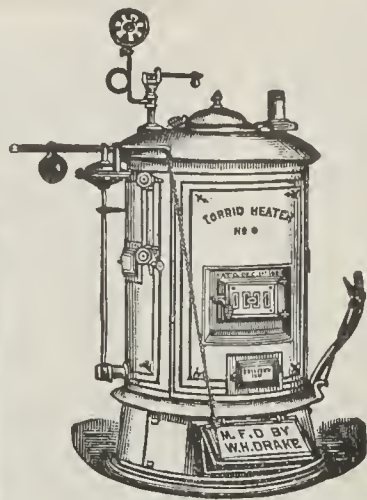
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FOR STEAM OR HOT WATER.



*It is Practical in Design.
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It has No Packed Joints.
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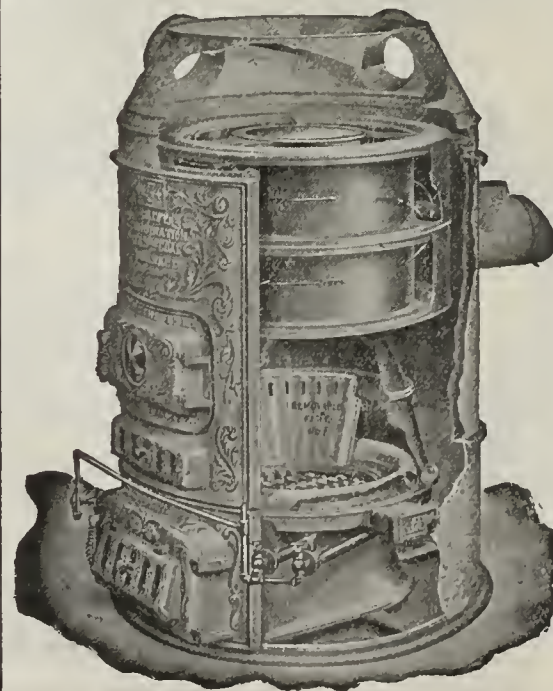
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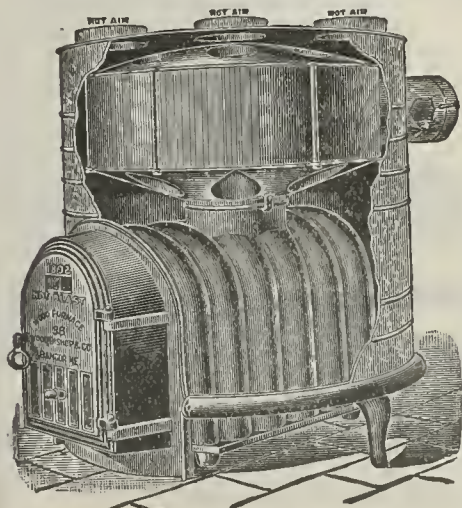
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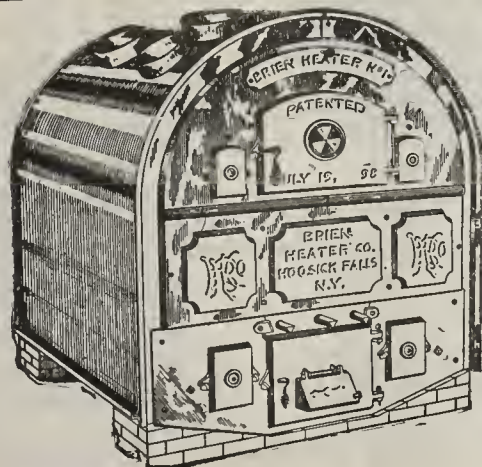
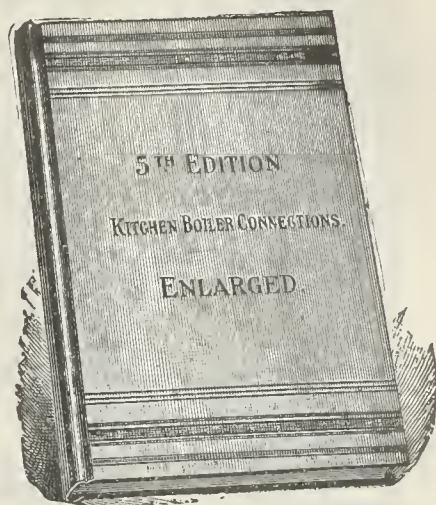


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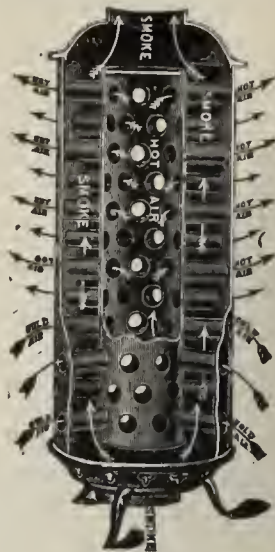
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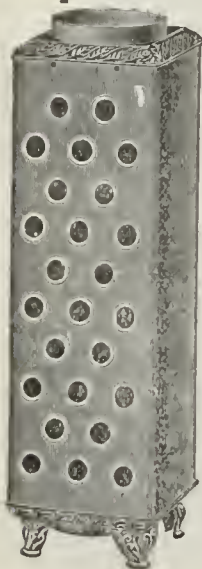
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There's no trouble or great salesmanship required to sell

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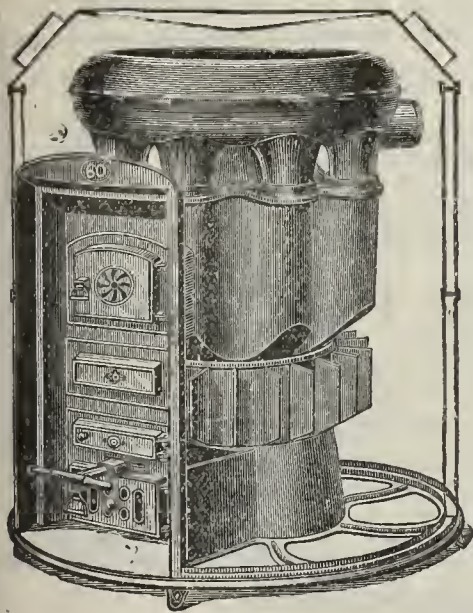
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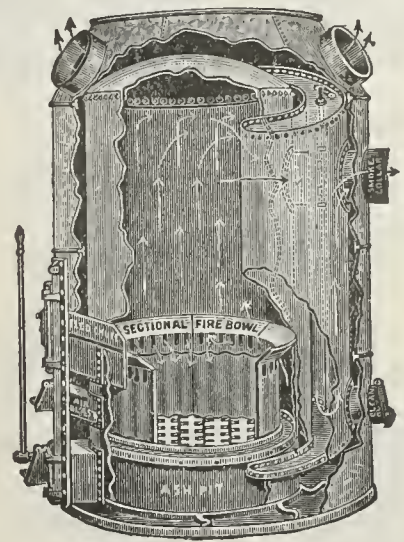
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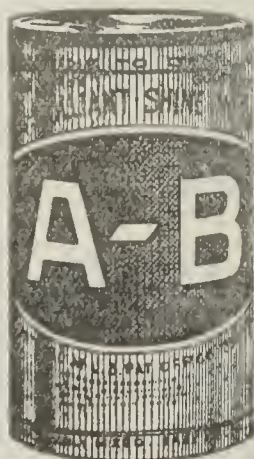
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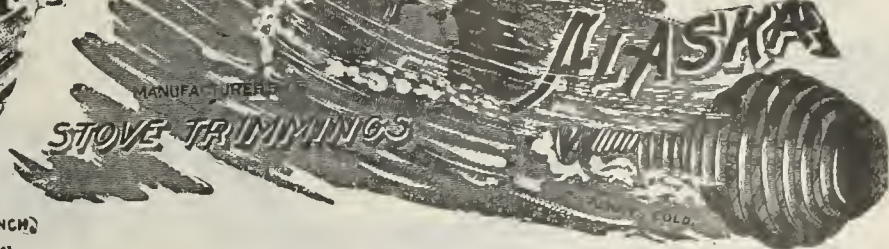
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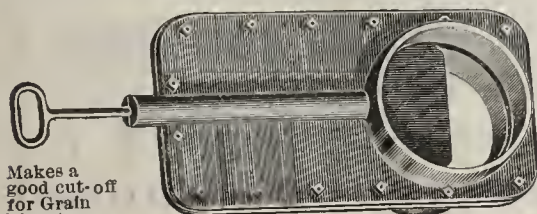
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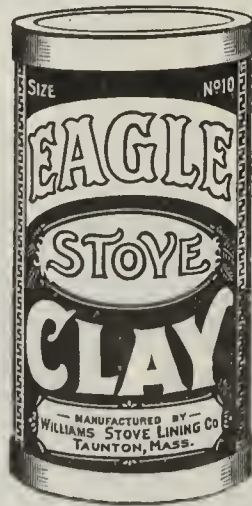
Rutland Fire Clay Co.,
RUTLAND, VT.



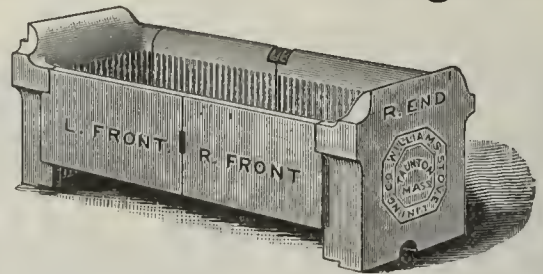
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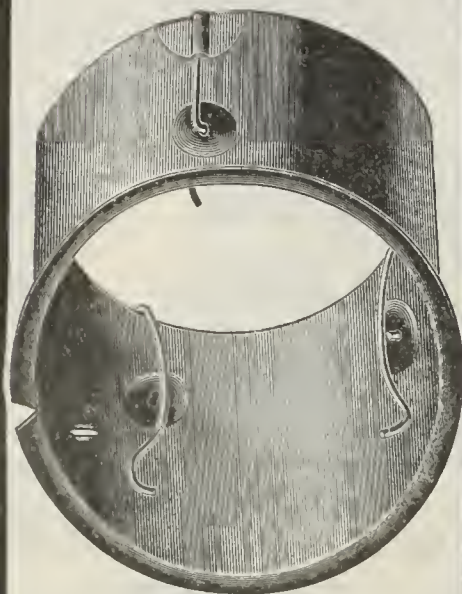
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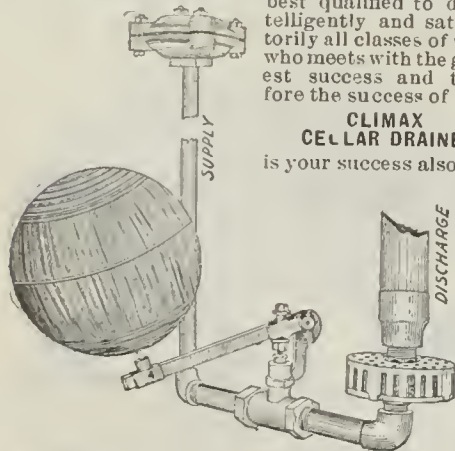
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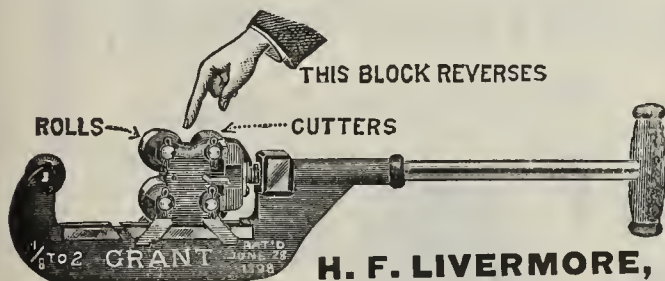
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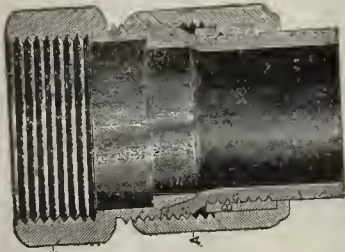
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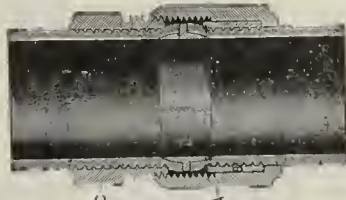
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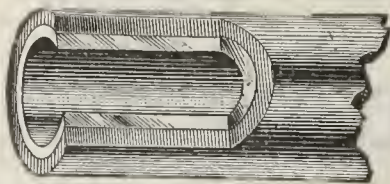
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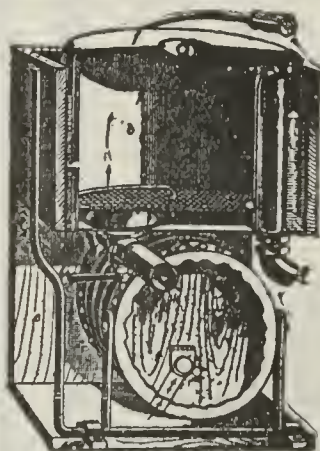
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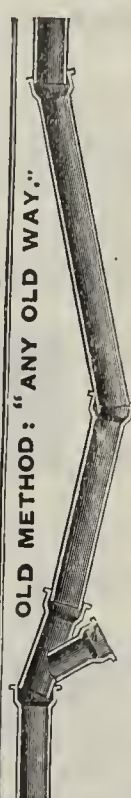
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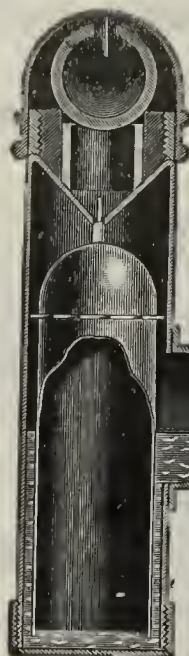
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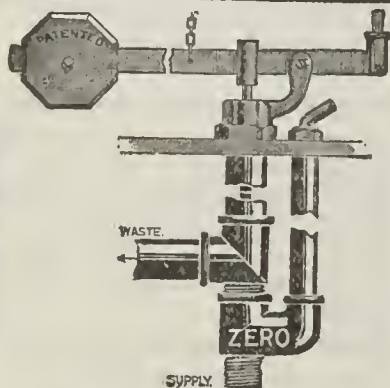
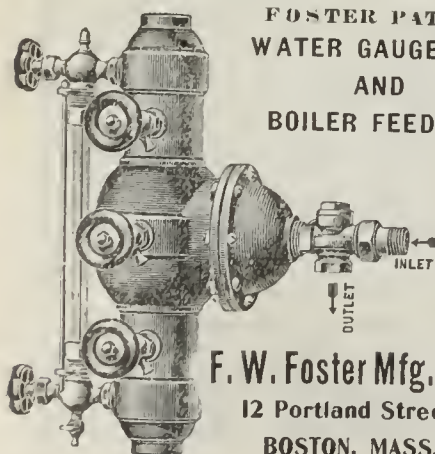
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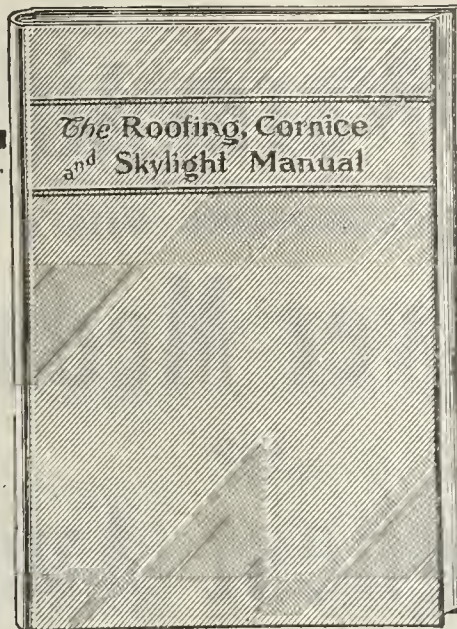
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Tin Roofing Pages 1-50. This section presents an article prepared specially for the book by an expert mechanic. A few of the subjects treated are the laying of flat and standing seam roofing, described in detail, with instructions for flashing around chimneys; connecting roofs with wall flashing; covering parapet walls and bulkheads; putting in valleys; shingle flashing, &c. An important table is given for finding the quantity of tin required for roofs.

Cornice Making Pages 51-140. This part of the volume consists of an article entitled "The Country Cornice Shop," reprinted from *The Metal Worker*, and treating the subject at length. It embraces a description of a shop equipment, such as can be purchased or made, and adapted to the country shop. A few of the subjects treated are the method of developing the patterns for much of the simpler work, as well as for cutting cornice miters; attaching molded gutters to brick walls; the attachment of eave trough to roofs of different kinds; the manufacture of round and square leaders; the making of simpler ornaments, etc.

Skylight Construction Pages 143-175. This division of the work consists of two prize essays reprinted from *The Metal Worker*, giving instructions for the production of skylights of all sizes, the development of hip bar and miters, also curb and side bars. One of these articles describes a skylight without a ventilator, and the other a skylight with a ventilator in the top. The illustrations cover various phases of the work fully and also show the method of catching the condensation which occurs with all skylights.

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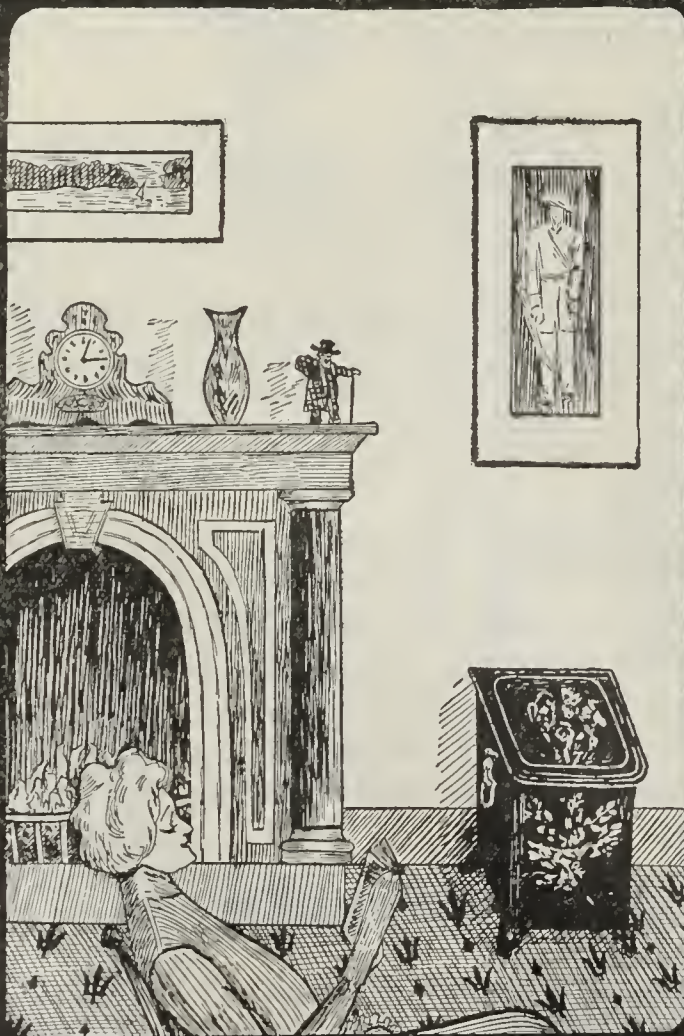
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Heating Mains.

The convenience experienced by those who are served from the heating mains which have been run through the streets of different cities has been such that, even if some disadvantages have been experienced, their use is not likely to be discontinued. In fact, it may be said that the heating of buildings by steam or hot water supplied from street mains has only just begun, and that the newer systems to be laid will be equipped to overcome the difficulties about which complaints heretofore have arisen. From many cities the report comes that old heating mains now leak to such an extent that their operation is no longer profitable and, further, that these leaks cause a damage to the roadway. In some localities the authorities have begun action to compel the companies operating such lines to put them in repair; in others, where contracts have not been completed, the companies are demanded to take such steps as may be necessary to fulfill their contracts.

There has been more trouble attending the use of steam heating mains than hot water heating mains. This is due to the higher temperature carried in the steam heating mains, owing to the pressure needed to distribute the steam through the systems. With the high temperature comes a greater expansion of the pipes and a certain movement of them. This, in some instances, has been sufficient to break the fittings or cause rupture of the pipes, allowing the steam to escape and find its way to the surface of the ground. This, in winter weather, with the continual freezing and thawing, has caused holes to be worn, endangering the usual street traffic. In other cases the line may not have been buried sufficiently below the ground, and in consequence, during cold weather, the snow has melted or the frost has thawed so as to leave a portion of the surface in a sloppy condition, which causes it to wear out easily, necessitating the expense of repairs. In many cities, where streets have been newly paved, orders have been given by the city authorities that no openings shall be made in the streets for a period of time, particularly during the fall or winter. This, however, is the very time when the street heating system may need an overhauling for repairs, after having laid in idleness during the summer, and this involves a complication that is not easily disposed of. This all goes to show that where franchises are granted for the laying of heating mains in the streets care should be taken to see whether they be for

steam or hot water, and every precaution should be used to prevent any of the troubles which have been experienced with the systems already in use.

Export Houses and the Cultivation of Foreign Trade.

Formerly there was more or less antagonism on the part of export commission houses to the sending abroad of direct representatives of manufacturers, a spirit which also reflected itself in their opposition to the sending out of such trade literature as catalogues, discount sheets and circulars, as well as to the foreign circulation of trade papers. Something of this spirit remains, but there is coming to be a recognition of the fact that the dissemination of such information, tending to awaken interest in American products, is for the ultimate advantage of houses who make it a business to supply foreign markets. An illustration of this is given in the remarks recently made by the head of one of the largest New York houses having relations with all parts of the world. He not only referred to catalogues, trade papers and printed matter in general as exceedingly useful in cultivating foreign trade, but expressed a fervent wish, as an exporter to the four quarters of the globe, that manufacturers would send their own specially qualified representatives and salesmen to introduce and talk specifically the merits of their goods. The point was made that no individual connected with an export commission house dealing in almost everything in the way of products of manufactures can so intelligently urge the merits of particular goods, meet the objections and answer the foreigners' questions as the manufacturer's salesman, especially qualified by knowledge and experience. It is not necessary for manufacturers to continue such trips unless they prefer to, as when once introduced the well equipped selling organization referred to above, and many others, are competent to market the goods. The main thing is to familiarize the buyer abroad with what he can use that is produced here, and subsequent orders the commission houses can solicit, ship and finance, buying outright from producers here and looking after the numerous intricate details incidental to such trade.

This is a broad way of looking at it from a concern with forty years' experience exporting goods, with millions of capital and numerous connections. The larger the volume of business diverted to the United States by any legitimate means, and the more foreign territory is canvassed by manufacturers or their personal representatives, the better for exporting interests in general. There was a period when the house in question spent much time and effort introducing American merchandise, but their business is now too vast for that, and they acknowledge that producers are better qualified to do it. It may be said that some of the keener manufacturers already realize this and are working along these lines. Some exporters are, however, very chary about giving information on export matters and very much prefer that manufacturers' representatives and their catalogues remain at home.

Furnace Heating Abroad.

In no country is the system of heating houses by means of hot air from especially constructed furnaces so generally used or perfected as in the United States. Although but few foreign countries have adopted this method of heating, Germany has given it considerable attention. A good deal of interest attaches, therefore, to the apparatus described in a special article on the subject presented in this issue. With the same care that all mechanical and scientific problems are worked out in Germany and each detail considered with a special view to economy, the furnaces in general use there have been produced. A marked contrast will be found to exist between the construction of the German furnaces and those in greatest demand in the United States. The furnaces produced in America forty or fifty years ago reflected much the same trend of thought among our early makers as is shown in the German productions. Whenever our pioneer furnace makers could expose a few inches of additional surface in a furnace, with the idea of extracting a greater amount of heat from the products of combustion before they escaped, the surface was added. The best furnaces of the present time are not lacking in heating surface, and they all provide that the fire travel shall be sufficiently long to utilize as far as practicable the heat generated in the fire pot, as well as that which is being carried to the chimney by hot gases. But our modern constructions give little evidence of the careful attempt to increase the surface that is shown in the illustrations of the article referred to. Many of the younger generation of furnacemen have not had an opportunity to study the construction of the first furnaces made here, and they may not recognize in these German furnaces any similarity to some of the earlier furnaces used in the United States. Some of the later American furnaces designed for heating school houses and other large buildings, however, show a trend in the direction indicated by the Germans. Consequently it is probable that all who are interested in furnace heating will find entertainment, and possibly benefit, in reading this special article and studying the illustrations presented with it.

Labor Fully Employed

One of the most reliable tests of prosperity is the condition of the labor market. When labor is fully employed and wages are high it goes without saying that business must be unusually brisk, and that it is being done on a profitable basis. That this condition exists at the present time is patent to the most casual observer. Labor bureaus and industrial agencies generally report that the demand for competent help is largely in excess of the supply. A scarcity of skilled labor is a matter of general complaint among employers in nearly all trades. Especially is this the case with the trades represented by our readers. Calls for tinsmiths, plumbers, steam fitters, stove and furnacemen, cornice makers and sheet metal workers are urgent from all quarters. In some cases shops are actually crippled for lack of competent workmen. Mills and factories generally are running to full capacity, and in some quarters manufacturers find difficulty in securing a sufficiency of hands to enable them to get out their full output of goods to meet the heavy demands of their customers. Present appearances promise a continuance of the prevailing activity in the industrial world throughout the winter, and few mechanics are likely to be out of jobs for some time to come. This is a decidedly gratifying condition of things which promises much for the general well

being and comfort of the community at large. Good wages and steady employment make for contentment and prosperity among the wage earning classes of the country. They also mean a free circulation of money in the purchase of the necessities and comforts of life, thus benefiting all classes of trade down to the smallest storekeeper.

Editorial Notes.

The advocates of public ownership of public utilities have received a shock, and the cause of municipal ownership a probable setback, by the announcement of the lease for a long term of years of the municipal gas plant at Toledo, Ohio, to a private corporation. This plant was erected about ten years ago and has cost the people of Toledo over \$1,000,000 in bonds and \$500,000 more in interest. As a result of a decade's experience it is found that the works have barely paid operating expenses, leaving practically nothing for the payment of interest on the bonds. The latter has been added annually to the deficit, leaving an interest charge of some \$47,000 to be paid yearly by the city on account of the plant. The rental that will be paid by the contracting corporation is only \$6500 a year, leaving a large balance to be defrayed each year by the citizens as the result of this experiment in municipal ownership. That this failure should have happened in the municipality so long under the leadership of "Golden Rule" Jones adds significance to the result.

At this time, when so much building is being done throughout the country, it is worth while drawing attention to one detail of construction that is often overlooked. That is the wiring of houses and other buildings of moderate cost, so that electric lighting may be introduced at any time. The work can be done much more neatly, expeditiously and economically during the construction of building than afterward. Electric lighting systems are being introduced nearly everywhere nowadays and in a short time there will be few places, aside from purely rural localities, unprovided with electrical facilities. The average house of the future will unquestionably be lighted electrically. It is desirable, therefore, that it should be equipped for such illumination from the first. The advantages of electrical illumination over other lighting systems are admitted. It is safer, cleaner and more satisfactory in many ways than either gas or oil. Builders, architects and owners would be acting the part of wisdom in providing for the electric wiring of all houses as they are put up.

American manufacturers are evidently quite as busy in 1901 as they were in 1900. At least this is a reasonable conclusion from an examination of the figures of the Treasury Bureau of Statistics, which show that the total imports of manufacturers' materials in the nine months ending with September, 1901, were greater in value than those of the corresponding months of last year, although an analysis of the imports, article by article, shows that in many cases the prices per unit of quantity have decreased. This decrease in price is so strongly marked that in many cases while the figures of value show a decrease in the nine months of 1901, as compared with those of 1900, the figures of quantity for the same period show an increase. For instance, imports of pig tin, used in manufacturing tin plate, show in value a slight reduction as compared with last year, but in quantity there is an increase of over 2,000,000 pounds. The total value of imports of raw materials for use in manufacturing in the nine months of 1901 was \$221,469,984, as compared with \$217,619,372 in 1900.

WHAT TO DO IN NOVEMBER.

BY H. C. W.

A whole lot of good things for the winter months that you have not done in the years gone by. Make this fall and winter season the best one we have known in our business—we have everything to help us! Make changes that have never been made before, study to have them attractive and different from your neighbors.

There is a wonderful lot of Do and Don't possible for the good of the business in these last months of the year. They should be to us like the home stretch of the race track—in which the urging is done and best results made. More can be done in November and the month that follows to retrieve possibly bad months gone before than in any other three or four ordinary months.

It's a capital time to push and push hard for results. There is a feeling in common among many merchants that "the year is nearly done with, and but little more can be accomplished, do what we will." It's a great mistake if we will only realize it—the best of the race is always at the last.

SOME THINGS TO DO.

Get out what's left of last winter's stock—have it gone over thoroughly—see if it cannot be made as good as the new stock coming in.

Mix it in with this season's goods when ready, and let it get away and bring a profit with the balance, instead of piling it up as "carried over goods," and sacrificing two profits. Hunt up the mistakes of other seasons' buying, and correct them in the winter's purchases for this season.

Some seasons, in spite of all we can do, bring a certain amount of absolutely dead stock; it's a good time to give it away if no other method will move it.

Hunt up the put away cuts of other seasons and get ready for new advertising—and make it new. Decide on what novelty advertising you want to do, whether it be calendars, vest pocket memorandums or what not.

See if show window work cannot be lessened by adding a tile or other permanent floor to the windows, by addition of brackets, drop shelves, wall cases, &c. Have signs and price cards gotten ready in advance, that you may not lose their good when too busy to attend to it.

TRY THE NEW MAN.

new at show window arrangement and new at advertising; see what surprises he has in store for you. He may have been with you for years, and all the time you have missed his good points, doing yourself in detail what he might have done, and to your great advantage. The man in the store who is not given a chance at this work by an employer is diffident as to the asking for it himself—more so than that he is not anxious for it.

An experience of some years has developed the fact that just such a reticent, quiet fellow nearly always shows up for a good window dresser or clever advertiser, if the way be thrown open to him. The writer calls to mind a young German of 18 or 19 years, never suspected for a moment by his employer as having talent for window arrangement, who, after a few weeks, was put in entire charge of such work and has been a prize winner in a number of such contests.

ANOTHER GOOD MAN.

He is in nearly every store, and at this season of the year is extremely valuable. I refer to the young man who, without being constantly reminded of it, will pick out the rusty or soiled pocket knives, razors, scissors and shears, and get them on a basis of "as good as new," bringing their full value. He will take the machinists' tools case and bring back many lost dollars out of it.

He sees that the brass and copper goods are brightened up and made salable, the rusty fire irons brought to a value. He gets the torn and soiled robes and blankets in such shape that at least there is no loss on them.

If he's good at this he's generally good at everything

else in the store. He is worth developing and bringing out, and at this particular season of the year is most valuable to the man who has him on his pay roll.

YOUR WINTER ADVERTISING

is more valuable, perhaps, than that of any other season of the year, and should be made a study. It's a good idea to ask for suggestions from every man at all capable you have in your employ. It's not bad to carry a vest pocket memorandum for jotting down ad ideas as they come to you—else they often get away forever.

Night work is not always desirable, but there is no question that to many of us our brightest squibs and best ideas come to us while sitting at home, and with other details of the business of the day lost sight of. Many men the writer knows do this class of work at night, and at home, because it is best when done there. The reading of the wonderful magazine work gives more and brighter ideas in ad work than we are willing to acknowledge. It is not necessary to copy them, but they are an education and teach much that may be a help.

The work of November should be exceptionally good, because on it, and the month that follows, depend largely your increased sales of holiday goods and novelties.

READ YOUR TRADE JOURNAL.

You have more time for this in the long nights of November than in many of the previous months, and much is to be gained from their careful going over. They are full of bright advertising ideas, as full indeed as any high class magazine.

There are articles and essays in many of them that are gems of information, both as to the trade and the outside world. The markets are as reliable as any to be secured elsewhere. They are full of the new things of the world, indeed the merchant who in these days neglects the trade journal is far behind just where he should be, and might be, far to the front. To men who take them and carefully study them it is a mystery why, with the small investment necessary, every merchant in business should not provide himself with one or more.

NOVEMBER FOR EARLY CLOSING HOURS.

It should begin them if they do not already exist, and in many towns of the West and Middle West the barbaric closing at 9 and 10 o'clock exists, and holds good all the year. The average day laborer has provided himself with an eight-hour day for his work. The machine shop, the foundry, the average dry goods house provides but eight hours. Yet hundreds of Hardwaremen in every State make slaves of themselves and their employees for 16 hours out of the 24.

It is due to the proprietor, and it is certainly due to those he employs that at least the evenings of the winter months be their own, to do as they will. No day laborer works any harder than the average Hardwareman; to no class should his evenings come nearer being due, for recreation, for reading, for the building up of the man. The State associations through local ones have been instrumental in bringing this about in a few towns in the States, at least for three or four months of the year. It should be universal, and early closing should hold for every month of the 12. More and better work is done, and this is an opportune time to take the matter in hand.

NOVEMBER A GOOD MONTH IN ANY BUSINESS.

A splendid one for collections—as a rule, all classes of people have money then, if at any time during the year. A good month to look forward and look backward, to know what you have done, and to see pretty well what you expect to do in the months to come.

As a rule, it is a prosperous month in nearly all lines, and it's largely what we make it, on through the month that follows to the first of the year.

Let's push it along, and push ourselves with it, for all the good things it has to give us.

There is evidence of a record breaking consumption of iron and steel. The mills are filled up with orders well beyond the end of the year, and pig iron stocks are decreasing, notwithstanding enhanced production at the blast furnaces.

European Warm Air Furnaces.

BY CHAS. F. HAUSS, BERLIN.

This construction of heating apparatus is known principally as a "calorifer," in practice is made in many

These, as is the case with the average American warm air furnace, had a very low efficiency, were easily overheated and burned out, which led to the construction of various styles of furnace, shown in the accompanying cuts, which provide principally for a horizontal travel of the products of combustion, and have a large

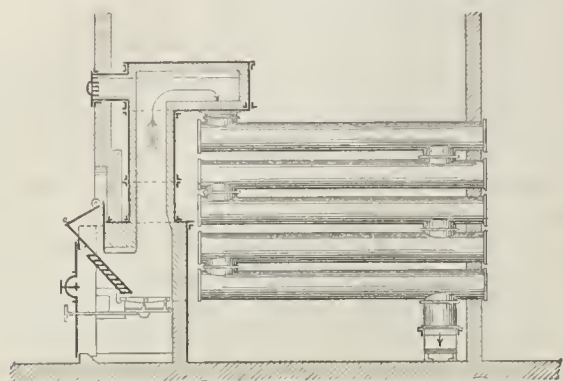


Fig. 1.

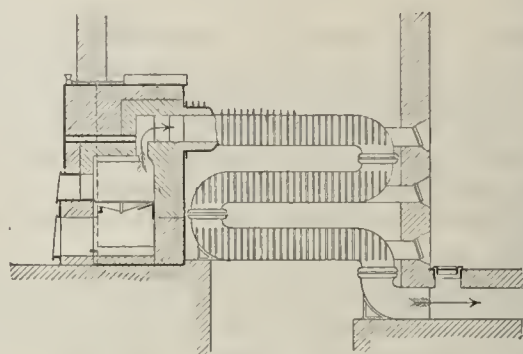


Fig. 2.

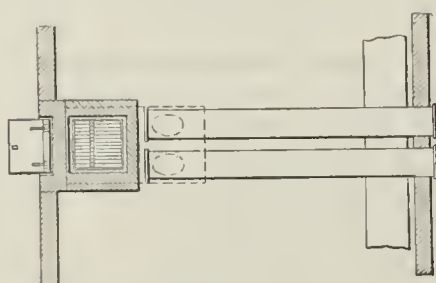


Fig. 1a.

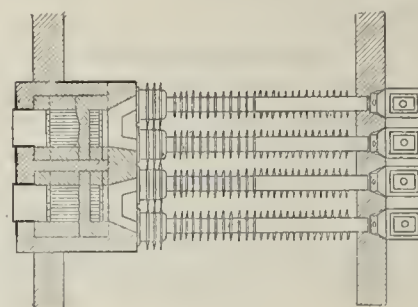


Fig. 2a.

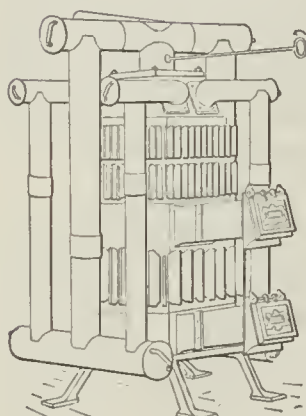


Fig. 3.

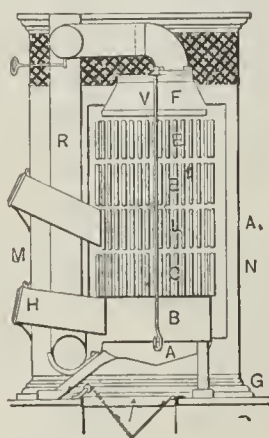


Fig. 3a.

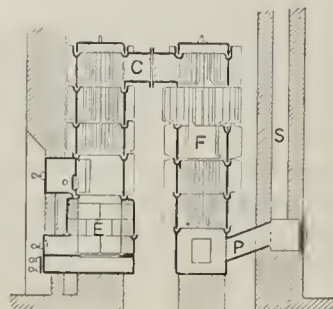


Fig. 4.

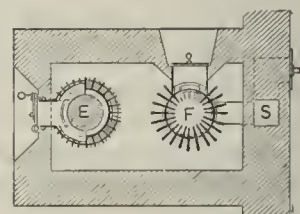


Fig. 4a.

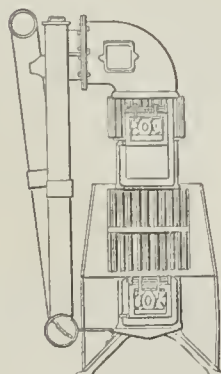


Fig. 5.

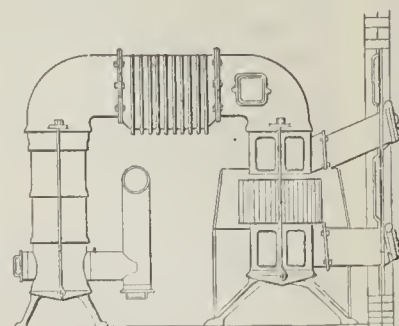


Fig. 6.

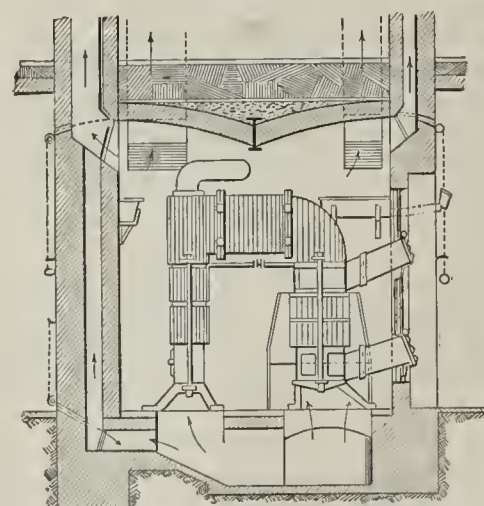


Fig. 7.

EUROPEAN WARM AIR FURNACES.

forms, the material used in its construction being mostly cast iron, although wrought iron and tile are used occasionally.

The oldest type of furnace was made of smooth cast iron tubes, either vertical or horizontal, connected into headers, through which the products of combustion were carried, usually by the shortest route, to the chimney.

percentage of extended surface to prevent the fire surface from attaining a red heat. The fire pots of some are lined with fire clay, others are built entirely of fire brick or tile, only the fire surfaces being of cast iron. To prevent cracking from expansion and contraction loose joints are provided. Where parts set on each other the joints are made with sand cups, and where horizontal tubes demand vertical joints these are made

with planed flange joints, or the one end of the tube being secured in the masoury, the other is allowed to expand and contract through a sort of stuffing box of sand. They are particular to make every provision for easy cleaning and repairing.

The portable furnace with a galvanized iron casing

daylight is not obtainable, care being taken to prevent any of the fumes or products of combustion of the gas entering the air chamber.

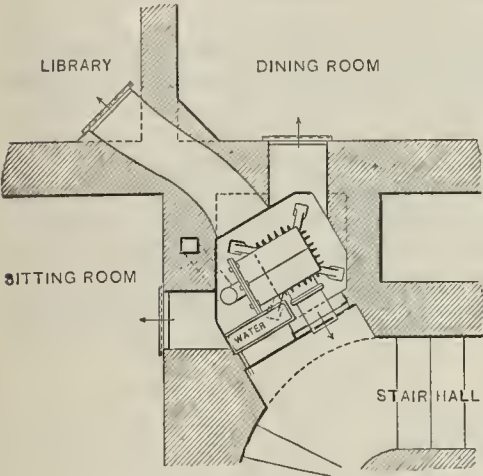


Fig. 8.

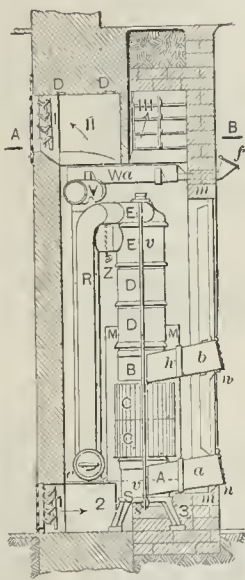


Fig. 9.

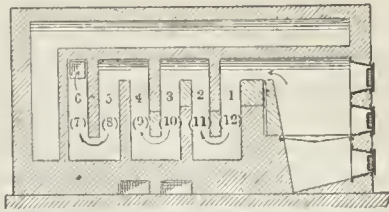


Fig. 10.

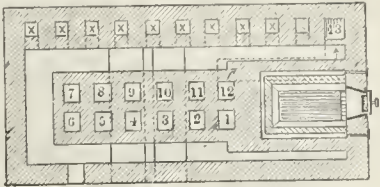


Fig. 10a.

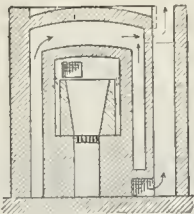


Fig. 10b.

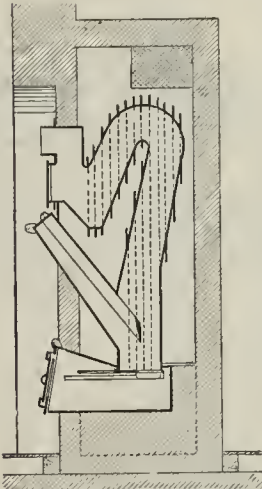


Fig. 11.

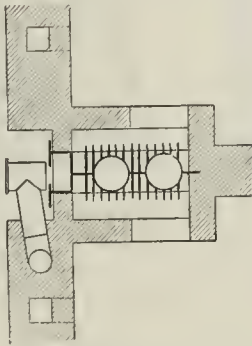


Fig. 11a.

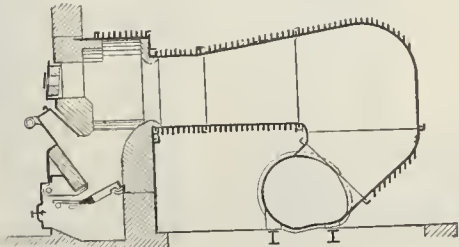


Fig. 12.

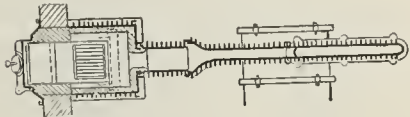


Fig. 12a.

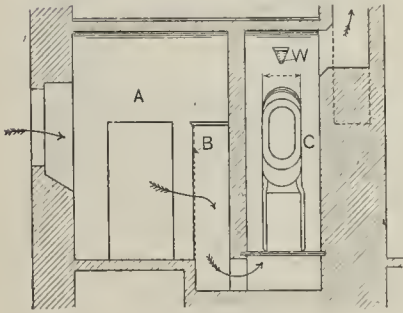


Fig. 13.

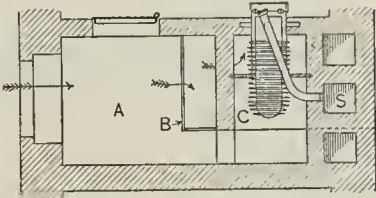


Fig. 13a.

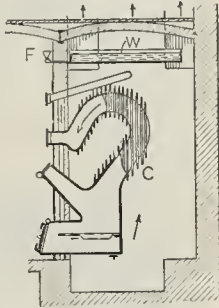


Fig. 13b.

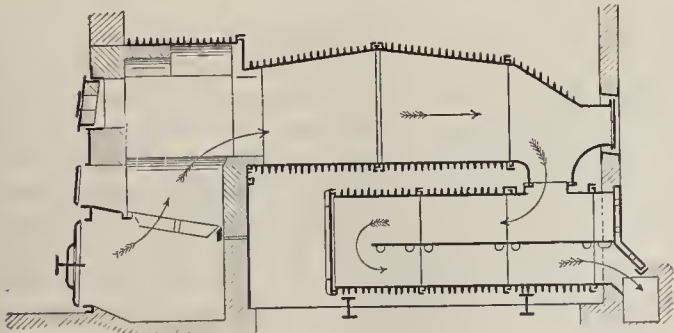


Fig. 14.

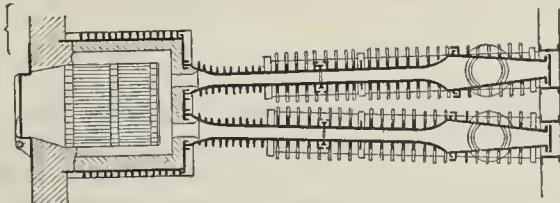


Fig. 14a.

EUROPEAN WARM AIR FURNACES.

is practically an unknown article in Europe, the furnaces being set in brick chambers, the inside walls of which are usually lined with glazed brick or tile. Then there is usually provision made for lighting the furnace chamber by setting into the side wall a double window and by having a gas burner outside this window where

The manhole doors are always double, and extreme care is used to insure the furnace chamber as well as the cold air supply duct being air as well as water tight, and all walls and ceilings over the furnace must be double, with an ample air space to prevent radiation in the cellar.

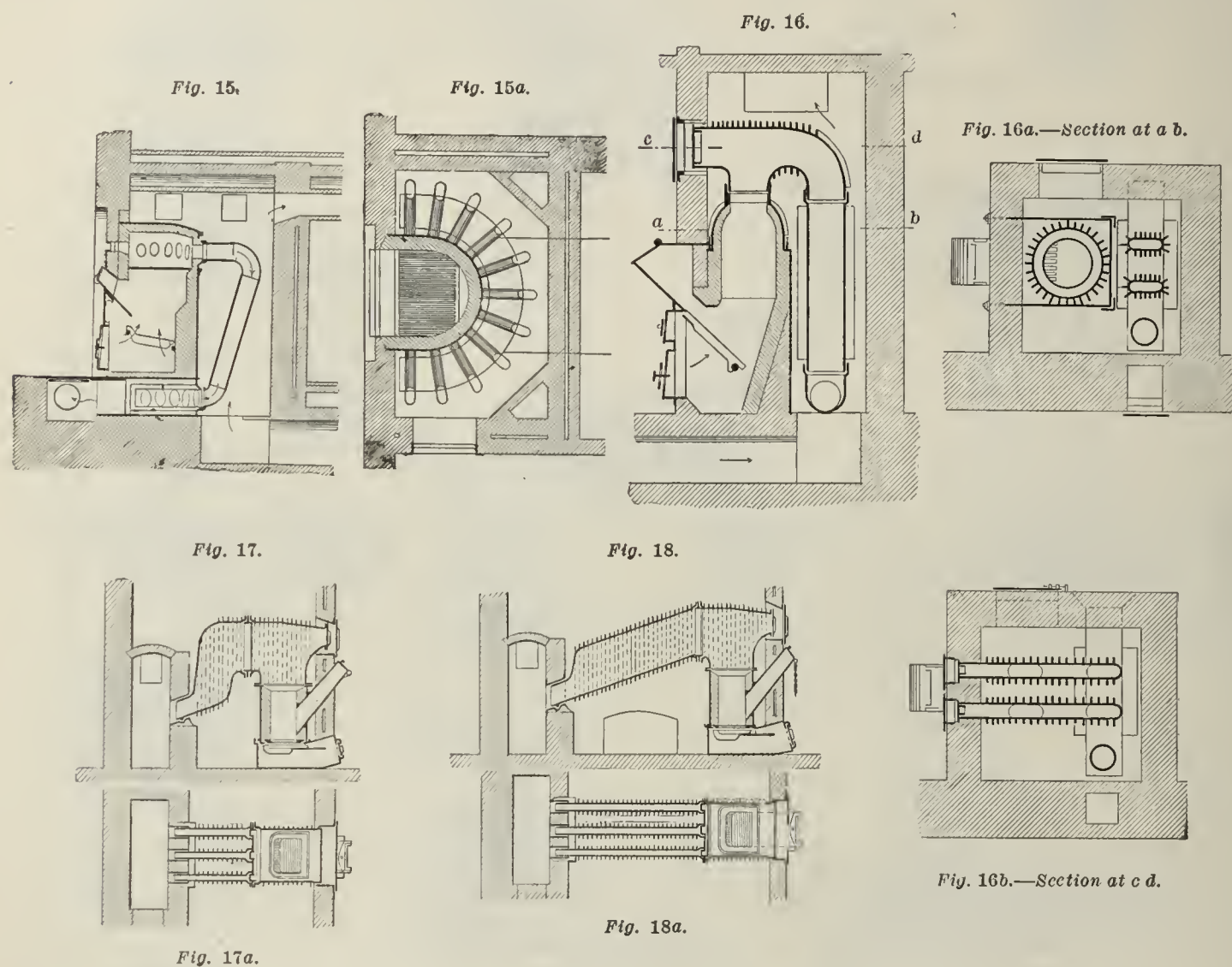
To insure an even temperature most furnaces are provided with a magazine feeder or a large fuel chamber, and in many cases with automatic regulators, which are connected to the draft door in the ash pit, and a check damper in the smoke flue, the smoke flue in most cases being underground and provided also with a slide damper, which is never allowed to cut off more than three-quarters of the area of the smoke flue. This latter is a police regulation in Germany and would be a good one if also enforced in America.

By inspecting the following illustrations the reader will note that the idea is to secure the largest amount of heating surface in the smallest space, and so divided as to distribute the heat to the best advantage and make it most effective; to have the smallest possible number of joints, and every necessary provision for expansion and contraction, as well as for cleaning. The forms shown indicate an effort to get as large a range of sizes

use of fuel, minimum amount of attention, and the smallest possible wear on the furnace, each square foot of smooth prime heating surface will give off 860 heat units, and each square foot of ribbed or extended surface will give off 650 heat units. Of course this is the minimum and could easily be doubled by increasing the rate of combustion and correspondingly reducing the economy.

The ratings of capacity for furnaces vary greatly, some giving the minimum, some the average and others the maximum ratings; but in every case they publish the actual fire surfaces and leave it to the engineer who plans the work to use any rating he chooses.

I happen to have a record of a furnace, shown in Fig. 1 and Fig. 1a, which has a fire brick combustion chamber and wrought iron return flues. This type of furnace is rated to heat from 300 to 500 cubic feet of space per square foot of heating surface. The case the



EUROPEAN WARM AIR FURNACES.

and capacities with the smallest number of patterns and parts as possible.

The best authorities agree that even though there is no limit to the size of warm air furnaces, to secure economy it should at all times be recommended that a single furnace should not have more than say 325 square feet of heating surface, and where more surface is needed to use two or more furnaces in a battery, as it is impossible to fire a large apparatus economically during the spring and fall, when only a fraction of the power is necessary.

With a properly constructed apparatus the smoke and gases should enter the smoke flue at from 500 to 580 degrees F.—that is, during the first firing up, and after the building is warmed and the apparatus is working regularly the gases should enter the smoke flue at from 320 to 400 degrees F.

The heated air should enter the rooms at from 100 to 130 degrees, and according to one authority the temperature of the heating surface should, if possible, be kept below 400 degrees F. Under these conditions, which, of course, are the best as regards economy in the

writer has in mind is a church in central Germany, in which there are two furnaces, each having 285 square feet of surface. The church contains in round numbers 285,000 cubic feet of space; therefore each square foot of heating surface is warming 500 cubic feet of air. The air to be heated is drawn from the church itself, and on a day with the outside temperature at 12 degrees the temperature of the air in the church was raised to 54 degrees in six hours' time, using 1080 pounds of good bituminous coal, besides the wood, &c., necessary to start the fire. The body of the combustion chamber of this furnace is also of wrought iron, has a magazine feeder and an angle or step grate, in addition to the shaking flat grate. This is one of the earliest types of furnaces made and is still much in use.

Fig. 2 shows a furnace of the same general type, the difference being principally that cast iron is used entirely with extended surface, instead of smooth wrought iron surface.

Fig. 3 shows a furnace of cast iron and wrought iron made in Austria, the body of which is used without the wrought iron tubes, or with tubes on one side, as shown

in Fig. 5, or on both sides, as shown in Fig. 3. This same body is used in the furnaces shown in Figs. 5, 6 and 7, and has a grate 16 x 18 inches. With this one size of base and grate the manufacturer makes 45 sizes of furnace of the style shown in Figs. 3, 5 and 7.

For instance, those illustrated in Fig. 5 are made in seven sizes, and each size in three styles—that is, the body only, or with pipes on one side only, and with pipes on both sides, making in all 21 sizes, of which the smallest and largest are rated as follows:

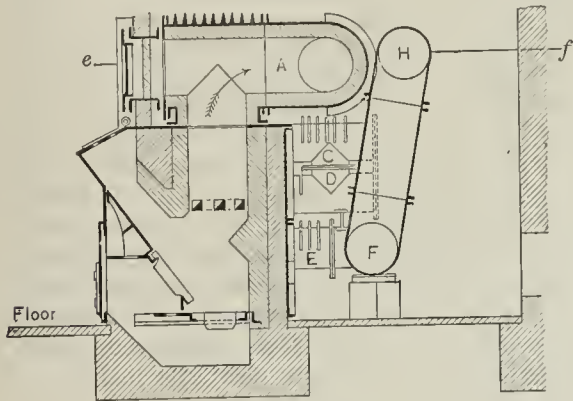


Fig. 19.

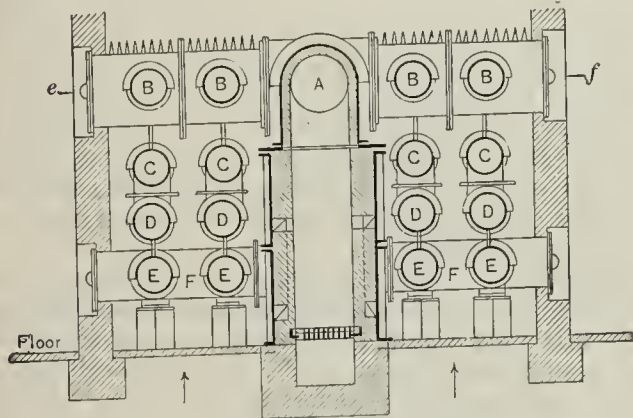


Fig. 19a.—Elevation at c d.

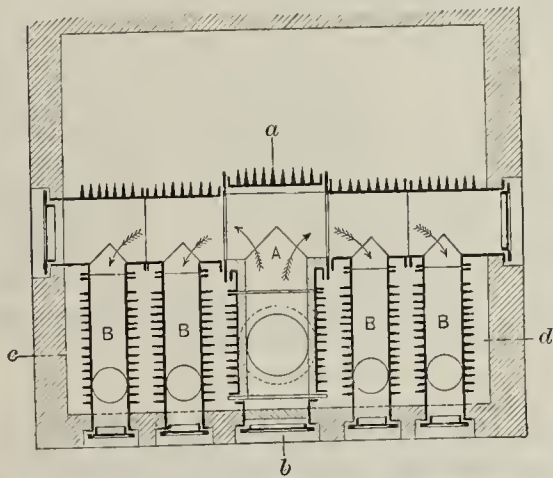


Fig. 19b.—Plan at e f.

Size.	—Body only.—		—Pipes on one side.—		—Pipes both sides.—	
	Square feet of fire surface.	Heats of space.	Square feet of fire surface.	Heats of space.	Square feet of fire surface.	Heats of space.
No. 1	57	18,500	73	24,000	90	28,000
No. 7	85	30,000	115	37,000	130	42,500

The first three sizes have one section between the fire door and ash pit door, as shown in Fig. 3, then one, two or three sections above the fire door. The four larger sizes have two sections between the fire door and ash pit door, as shown in Fig. 5, and the different number of sections above the fire door.

Fig. 3a is the same style of furnace with a round grate and fire pot and a casing the same as an American ventilating stove.

Fig. 4 shows practically the same style of furnace, except that it has a brick lined fire pot of larger capacity and a most peculiar arrangement of fire surface, in that the webs or fins that surround the different cast

sections are also carried into the inside of these sections, the inventor claiming that surface which gives off heat ought to be just as good to take it up. In this furnace the fire is built in the cylinder E, in which the products of combustion rise to connecting pipe C, through which they pass into and down through cylinder F to their exit in smoke pipe P, which connects them with the chimney flue S. This type of furnace gives a large amount of heating surface in a small amount of space, and a variety of sizes with few patterns.

Fig. 5 shows the same furnace fire pot as shown in Fig. 3 and described under that number. The use that this type of furnace is built for is shown in the plan, Fig. 8.

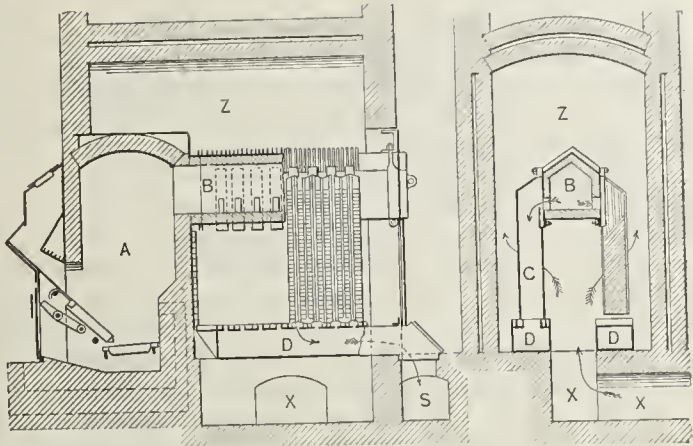


Fig. 20.

Fig. 20a.

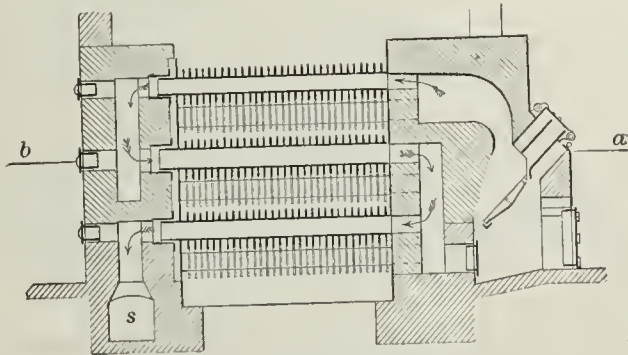


Fig. 21.

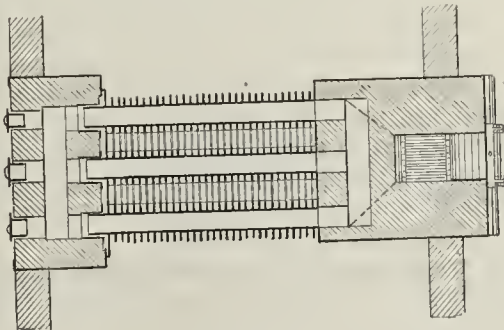


Fig. 21a.

EUROPEAN WARM AIR FURNACES.

Fig. 6 shows the same fire pot again with cast iron extension sections and elbows on top, and with wrought iron diving flue at the rear.

Fig. 7 shows the same furnace with a cast iron diving flue all covered with fins or extended surface. Both of these last named furnaces can be enlarged by adding sections above and below the fire pot and in the horizontal and rear sections. Those shown in Fig. 7 range in size from 172 to 330 square feet of heating surface each, and are rated to heat from 63,000 to 90,000 cubic feet of space.

While the writer admits that from a commercial point of view this type of furnace would be all right, in that with small outlay and a small stock a very large number of sizes of furnaces can be furnished, his early training in the furnace business will not allow him to admire or recommend this type of furnace. It is the writer's thought that even though the ratings are apparently

conservative enough, the grate surface ought to increase as the fire or heating surface increases.

Fig. 9 is another furnace of this same general type with round fire pot and wrought iron down draft flues same as Fig. 3a.

Fig. 10 shows a furnace built entirely of tile or fire brick. The principal objection to this type of furnace is the difficulty in cleaning it properly. Its principal advantage lies in its ability to store the heat and give it off slowly and evenly. The fire and products of combustion pass up from the grate to and over the bridge wall, then down and up through the different flues as they are numbered, to the rear, then to the front again until they find their exit in the chimney flue numbered 13. The flues marked *x x x* are the warm air flues leading to the different rooms.

Fig. 11 shows an all cast iron furnace used for heating military barracks. These furnaces are cast in two pieces—that is, two halves, which are bolted together. They are provided with a long magazine feeder and covered entirely with flanges or extended surface.

Fig. 12 shows a very large cast iron furnace of a modern type, with tile fire pot and combustion chamber and cast iron extended fire surface, so arranged that one section can be set beside another, and that the grate surface increases with the fire surface, the grate being always of exactly the size necessary to burn the amount of fuel required to furnish the quantity of heat desired. This furnace has a magazine feeder and angle grate.

Fig. 13 shows another simple all cast iron furnace, of the same style as Fig. 11, but in connection with it is shown the cold air settling chamber A, the screen B, through which the air passes via the pit to the hot air chamber C. The water pan W is filled through the funnel F. It will be noted that the water pan is hung over the furnace, whereas all American manufacturers put the water pan as near the bottom of the furnace as possible.

In every European hot air heating apparatus a water pan is considered as necessary as the grate, and in the better class of work the size of the water pan, its area and the number of heat units required to evaporate a certain amount of water from a certain temperature per hour are figured as accurately as any other part of the apparatus.

Fig. 14 shows another of the more modern styles of cast iron furnaces with tile lined fire pot and cast iron horizontal return flue bottom radiators. The gases pass as indicated by the arrows and find their exit in the chimney flue under the floor at the rear of the furnace.

Fig. 15 shows a freak type of furnace similar to some American constructions. It has a brick lined horse-shoe shaped fire pot and a series of smooth cast iron tubes all around. The gases pass into and down through the tubes; then all these streams of gas meet under the furnace ash pit and enter the smoke flue under the floor immediately in front of the furnace.

Fig. 16 shows an all cast iron, round, brick lined fire pot furnace of limited size and smaller type, with two oval cast iron diving flues, through which the gases enter the smoke pipe at the bottom.

Figs. 17 and 18 show furnaces made by the same manufacturer, having brick lined fire pots, all cast iron combustion chambers and triple flat cast iron radiators, through which the gases reach the large smoke chamber in the rear. The fire pots, which are provided with a magazine, are alike in both furnaces, and to change the amount of fire surface different lengths of radiators are used.

Fig. 19 shows a more complicated style of all cast iron furnace, with brick lined fire pot, magazine feed, with an angle as well as a horizontal grate, and with provision for admitting air above the grate through the three square holes diagonally shaded and shown in the sectional elevation *a b*, which latter, when properly regulated, would insure a perfect burning of the gases of combustion. In this furnace the gases pass upward into the large top header or manifold A, then forward through the double tier of tubes B, back through tier C, forward again through tier D, and back through tier E, into the bottom manifold F, where the different currents of gas combine and find their exit through the

smoke pipe H. Though this is an efficient furnace, there are too many joints to be made with gaskets or putty to make it desirable.

Fig. 20 shows a slab sectional furnace that admits of a most accurate arrangement of the amount of fire surface wanted in an apparatus. The fire chamber is a large roomy affair, provided with a magazine and double grate similar to that described in Fig. 12, and has the dome A as well as the horizontal central flue B lined throughout with fire brick, through which the gases of combustion pass to be distributed into the slab sections on either side, then downward through the slab diving flues C into the bottom manifold D, by which they are passed to their exit in the chimney flue S. The upper joints are made with asbestos gaskets between the planed flange joints, while the bottom joints are made with sand filled cup joints, which allows for proper expansion and contraction. The cold air is introduced through an underground air duct under the center of the furnace and passes between the several slab sections, the extended surface of which is all placed at an angle of 45 degrees. By this method of bringing in the air a positive heating of the same is insured, hence this furnace ought to be especially desirable in blower systems of heating.

Fig. 21 shows the furnace most used in Europe. It has a tile lined fire chamber, with magazine and angle grate in the front and tile return flues forming the rear end. These two ends are connected with straight flanged tubes, fastened firmly in the front wall, and expand and contract through a cast iron plate, behind which is the sand that makes the gas joint yet allows perfect freedom of movement to the pipes. The gases travel as indicated by the arrows to the chimney flue S. The tubes are arranged in alternate tiers of three and two tubes, as shown.

In estimating on furnace heating the European engineers figure, in their painstaking way, the exact number of heat units required to heat the given space, allowing for all losses through walls, floors and ceilings, as well as the amount of heat lost by ventilation, knowing in advance the velocity of the air and very closely how much fuel is to be burned.

The size of grates for furnaces should be as follows:

Fuel used.	of fuel per hour is—	The free air space necessary to promote proper combustion is the following per cent. of the total grate surface.
Anthracite coal....	12.3 to 14.6 square feet.	33 1/3 to 50 per cent.
Bituminous coal....	6.8 to 7.7 " "	33 1/3 to 50 " "
Lignite	9.8 to 11.8 " "	20 to 33 1/3 " "
Wood or peat.....	9.0 to 10.0 " "	15 to 20 " "
Coke	4.3 to 5.5 " "	33 1/3 to 50 " "

* Where a magazine feed or large fire chamber is used, these sizes can be reduced 25 to 30 per cent.

The Baltimore Stove Trade.

A very satisfactory fall trade is reported by nearly every one of the manufacturers and dealers in stoves, ranges and heating goods in Baltimore, Md. The business done is said to be larger and more substantial than that of last season. The fall season generally was late in opening, but when deliveries began to be ordered both manufacturers and dealers were overwhelmed with demands for early shipment. Sales have been heavy in nearly all lines of goods. Heaters and ranges, as well as oil and gas goods, have sold equally well. An extensive demand for sheet goods is noted, but owing to the scarcity of sheets there has been considerable delay in the deliveries on this class of goods. Some manufacturers are beginning to feel the customary fall slackening off, their customers being stocked up. With the present moderate climatic conditions no heavy renewal orders have been received as yet. The Southern trade has been a very good one this season and a large quantity of goods have been shipped into that territory. Another very gratifying feature of the trade in that section is the promptness with which settlements are being made. This is taken to be indicative of the prosperous condition of that portion of the country at this time.

Victor Stoves and Ranges.

The Victor Stove Company, Salem, Ohio, are issuing to the trade a 56-page catalogue, tastefully bound in a dark green cover and well printed and illustrated. Following the title page is a well arranged index. The terms of the house are given, and it is pointed out that the transportation company are responsible to the consignee for all damage sustained by breakage after the goods have been received in good order from the shipper. The first section of the catalogue is devoted to the Victor Belle, a square, high oven, portable range, made with the oven on the left hand, and the Victor Model, a range of the same type made with the oven right or left. These ranges are made with end hearths for burning soft coal or wood and are equipped with high shelves, hot closet, reservoir, oven shelf, towel racks and oven door kicker. They are made with ovens 18, 20 and 22 inches wide, and with 8 and 9 inch covers. The Victor Crown and Victor Prize are cook stoves provided with similar conveniences. The Grand B, Falcon B and Victor Grand are ranges that have established a reputation in the trade, while the Victor Faicon is a popular cook stove. In another section of the catalogue are shown the Victor Oak stoves designed for burning either coal or wood and provided with hot blast pipe for burning soft coal. These stoves are provided with the usual air tight ash pit, nickel plated foot rails and trimmings. For large work the stove is made with an extra high body. The Victor Lark and Victor Cottage are small wood stoves. The Champion Box stove is designed for burning wood 36 inches long. The Victor parlor cook is a small square stove with an oven adapted for burning coal, wood or natural gas. The Royal Cannon is a globe stove of modern construction adapted for shops and stores. The last two pages of the publication refer to stove polish, stove scrapers, cover lifters, stove dealers' supplies and the standard two piece stove cover.

ODD PLATES.

THE KANSAS CITY FURNACE PIPE COMPANY of Kansas City, Mo., have been chartered with a capital stock of \$5000 by E. L. Salmon, Day K. Smith and R. S. Mitchell.

A FIRE recently occurred at the plant of the Duffy-Trowbridge Stove Mfg. Company of Hannibal, Mo. The principal damage was done in the warehouse, which contained 30 carloads of Stoves, all of which were more or less damaged. The fire, however, did not reach the foundry or the mounting shop, which are being run at their full capacity. The company state that they are able to take care of their orders even at this season with a reasonable degree of promptness.

At this season of the year Stove men are frequently called upon to make quick repairs to the fire chambers of Stoves. In this connection George Callahan & Co., 218 Front street, New York, call special attention to their dry No Clinker Stove Lining. This Cement can be mixed in quantity for the work, and is said not only to be proof against cracks and crumbling, but also to prevent the adherence of clinkers to a fire chamber lined with it. Stove Putty, Stove Enamels and Furnace Cement are other specialties of the house.

THE J. F. PEASE FURNACE COMPANY, LIMITED, Toronto, Canada, made a fine display of Wood and Coal Furnaces, Combination Heaters and Boilers at the recent Industrial Exhibition in that city.

THE INDIANAPOLIS PASTE COMPANY of Indianapolis, Ind., are sending to the trade a 12-page pamphlet devoted to the different varieties of Paste which they make for use of manufacturers of different articles. Their E Paste is especially adapted for attaching labels to tin, and is suitable for packers of fruit and vegetables. A special Paste is made for attaching asbestos pipe covering to hot air pipes of furnaces and steam and hot water pipes on heating apparatus. It is claimed that the special feature of this Paste is that the materials which it connects stick together permanently.

At the recent Toronto Industrial Exhibition one of the most attractive displays in the Stove line was that made by Clare Brothers & Co. of Preston, Canada. It consisted of a complete line of their specialties in the way of Stoves, Ranges and Heaters, a prominent feature being their Hecla Furnace, designed for using coal or wood as a fuel. In order to meet varying requirements the manufacturers have brought out five sizes of this heater, the largest being suitable for schools, churches and public buildings. Visitors who were interested in the problem of hot water heating had their attention drawn to the Preston Boiler, which provides vertical circulation, with its waterways thoroughly surrounded by fire.

THE CAMPBELL FURNACE COMPANY of Des Moines, Iowa, are doing a large amount of work at quite a distance from their headquarters. The company have changed the business method of handling Furnaces, and now install every plant with their own expert workers. They are placing a Heater in the home of A. J. Hoban of St. Paul, and are installing them in Middle Nebraska and Kansas, Southern, Middle and Northern Missouri, as far south as Albuquerque, N. M., and as far west as Colorado Springs, Col.

WE understand that the New Home Furnace Company of Norwalk, Conn., have made arrangements to have their New Home Furnaces manufactured at the Plainfield Foundry, where they will be finished and shipped direct.

E. SEIDEL, F. Grolshagen and O. Seidel advise us that they have established a Pattern shop under the name of the Milwaukee Pattern Works, at 515 Cedar street, Milwaukee, Wis. The members of the new firm, having been long and prominently active in the art of Pattern making, express themselves as confident of their ability to satisfy the demand made upon them in that line. They are prepared to do all kinds of work and have the facilities for furnishing sketches and drawings for ornamental and Stove Patterns.

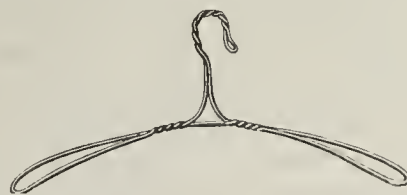
UNDER the name Gas King, B. B. Christie, Dayton, Ohio, has patented both a Heating Stove and a Hot Air Furnace for burning natural gas, which can also be readily adapted for using oil fuel. In operation they are said to have demonstrated a high efficiency. Patents are to be taken out in Canada, Great Britain and other countries, and contracts to manufacture on a royalty can be made with Mr. Christie.

THE GOODWIN MFG. COMPANY of Topeka, Kan., have recently been organized to manufacture an improved Stove Pipe Collar and Patent Flue Stop.

THE plant of the Jackson Novelty Works, manufacturers of Oil Stoves, at Jackson, Mich., was visited by a fire last week, inflicting a loss of about \$3000.

The Double Hook Endless Garment Hanger.

The improved garment hanger shown herewith is being introduced by Charles P. Dodge, 67 Payne street, Lowell, Mass. The hanger is referred to as being made



The Double Hook Endless Garment Hanger.

of the best steel wire, bent and twisted into proper form, and tinned with the best triple plate tin. The peculiar feature of the hanger is that it has no ends or seams of any kind, and that the hook is double twisted. It is remarked that the hanger will not tear garments or roughen even the softest of velvet collars; also that the hook will not bend out of form, thus making the hanger adapted to hard, heavy work. The manufacturer states that the price of the hanger is low, that the quality is good and that it is guaranteed to give satisfaction.

A THANKSGIVING DAY STOVE WINDOW.

BY BUSY.

Several years ago I took up with the suggestions made in *The Metal Worker* of using the national custom of enjoying a Thanksgiving dinner for the purpose of working off stove stock and increasing my sales and profits. It is fortunate for the stove trade that the Thanksgiving dinner custom is so widely honored and observed, for even those stove men who do not make any special preparation to increase their trade on this annual occurrence do sell here and there a new stove, some grates, fire bricks or house furnishing goods that would not be purchased if they were not needed for the annual feast. I have a corner in my mind where I store things to be disposed of at my Thanksgiving Day stove sale, and have found that I can do a very nice bit of business, after the natural trade of the season is closed, by making special preparations to enable the people of my locality to have their cooking and heating apparatus

I shall run up a planished iron pipe and place on it one of the fuel saving smoke pipe radiators that are so generally advertised. To this will be attached a placard, saying: "Put It Upstairs. It Will Warm a Chamber." I shall use the lower part for a cast iron floor thimble, bearing a card, saying: "No Fires with Our Floor Thimbles." Near the hearth of the range I shall have a coal hod, and by it a coal sieve, a fire shovel, a clinker slicer and one of the convenient clinker pickers that are now frequently sold.

I shall also have a good sized market basket containing some apples for the apple sauce, and alongside of it a good sized granite pan with cranberries for the cranberry sauce. On the opposite side of the window I shall pile up some big golden pumpkins, and lay on top of them some meat choppers, suggestive of mince pie. In the oven I shall put some cake pans and on the floor, in front of the range, a large oval platter, with the carving knife and fork suggestively crossed upon it. Beside it will be a large roasting pan for the turkey, and in the



A Thanksgiving Day Stove Window.

in good order, so that they may be well fed and kept comfortably warm on the day of Thanksgiving.

This year I intend to have a Thanksgiving Day stove window, and I intend to trim it so as to attract attention—that, I find, is the most essential feature of any advertising. I have also found that to attract attention without satisfying it is a greater crime than to live and do business in an obscure way. For this year I have prepared a red banner, on which there are white letters stating "Here's the Place to Get Ready for Your Thanksgiving Dinner." This is large enough to stretch across the sidewalk in front of my store, so that no passerby can miss it. I intend to put this out and trim my window on the Friday night of November 15. This will attract the attention of the people who come to town from the country on Saturday to do their shopping, as well as that of the school children and shoppers in town. I will have the advantage of two Saturdays previous to Thanksgiving.

I intend to use the range which I am making my leader as the central feature of my display. This range has a high shelf, upon which I will put a tin bread pan covered with a towel. On the nickel plated tea shelves I will place on one side a coffee pot and on the other a teapot. On the top of the stove I will have a nickel plated tea kettle and a granite iron sauce pan. On the top of the warming shelf, opposite the bread pan, I shall put a corn popper. From the top of the warming shelf

pan a large basting spoon. I shall also have pans of walnuts and shell barks, and on them will display nickel plated nut cracks and nut picks, also the heavy japanned nut crackers so generally used.

The central feature of the window will be a big turkey bearing a placard, saying: "All this Fuss is Being Made for Me. I Am a Visitor from Bill Jones, the Butcher." Already I have arranged with our butcher to supply me the first week with a turkey with the feathers on, and the next week a turkey without feathers. This is my plan, and I give it so that anybody else that may want to draw attention to their store and thereby increase their trade for stoves, table cutlery and kitchen equipment, as well as stove pipe and grates and bricks, may profit by the suggestion.

THE INDIANA MFG. COMPANY, manufacturers of Hollow Ware and other Castings, Jeffersonville, Ind., have recently completed a factory of 100 fires capacity for the manufacture of Chain, and are at present making Trace, Wagon, Breast, Log Chain and Chain Dogs. They expect to make all kinds of special Chain up to 1 inch. The plant is referred to as equipped with the latest approved machinery, and under the direction of experienced hands. The company are also putting on the market a line of Enamelled Pitcher Pumps, the manufacture of which was commenced about a year ago.

Stove and Hardware Dealers.

EDWARD MILLER & Co. Meriden, Conn., have a very attractive exhibit in the Aceylene Building at the Pan-American Exposition. Included in the display is the Electrolite Acetylene Gas Table Lamp in many attractive finishes. They are also showing a large line of portables for commercial and acetylene gas. These portables are original designs and are made up in a variety of beautiful finishes.

THOS. A. NICHOLS, formerly a member of the firm of Nichols & Rankin, Stronghurst, Ill., has bought the Hardware, Stove, Tinware and Sporting Goods business of Frank Kupper, Burlington, Iowa, and will continue it under his own name. Mr. Nichols is making some improvements in the store and will enlarge the stock.

THE MCANDREW HARDWARE COMPANY, Bentonville, Ark., have been incorporated with a capital stock of \$6000. They will handle Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c., at retail.

D. R. BALL & SON have lately opened up in business in Juniata, Neb., handling at retail Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

H. H. BURLING has purchased the Hardware, Stove and Farm Implement business formerly carried on by J. F. Reller in Cortland, Neb.

J. C. BENDER has disposed of his Hardware, Stove and Harness business in Newport, Neb., to C. J. Reynolds, who continues at the old stand.

SMITH & STREHL have bought the Hardware, Stove, Tinware, Farm Implement and Bicycle stock of John D. Bonton, Monroe, N. Y. They report business as excellent, especially in the shop, repairing roofs, putting in Furnaces, Stoves, &c.

MURDOCK-DUNWIDDIE COMPANY have succeeded Frederick Hardware Company in Beloit, Wis., dealers in Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c.

ANDERSON & WARNE are a new firm in Elburn, Ill. Their stock comprises Hardware, Stoves, Furnaces, furniture, &c.

WATERMAN HARDWARE COMPANY is the name of a new hardware concern, recently incorporated, who will open up November 15 at 141 South Pearl street, Albany, N. Y. They will deal in Builders' and General Hardware, Tools, Kitchen Utensils, &c., and will be pleased to receive from manufacturers illustrated catalogues, price-lists, quotations, &c.

JAS. E. CARSON of Fandon, Ill., has succeeded T. J. Bowman in the Hardware, Stove, Tinware, Agricultural Implement, Buggy and furniture business in Colchester, Ill.

THE UNITED STATES ALUMINUM COMPANY and the Aluminum Cooking Utensil Company were incorporated last week by interests of the Pittsburgh Reduction Company, makers of Aluminum. The companies are to operate in connection with the works at Niagara Falls and New Kensington. Various Aluminum Specialties are to be produced. The first company have named as their capital \$25,000, the other \$10,000. The incorporators are R. B. Mellon, A. K. Lawrie and Arthur V. Davis of Pittsburgh; R. E. Withers, Jr., Parnassus, and C. M. Hall, Niagara Falls, all connected with the Pittsburgh Reduction Company.

THE GRAND MFG. COMPANY have been incorporated at Milwaukee, Wis., with a capital stock of \$25,000, to manufacture the Grand Washing Machine. The incorporators are Hamilton J. Matthews, Joseph R. Schreck, Fred. E. Wittenberg and Dr. Thomas Fitzgibbon.

THE S. M. HOWES COMPANY, 40-46 Union street, Boston, Mass., have just issued a 40-page illustrated catalogue of the Fire Place Goods made of brass, wrought iron and cast iron, which they are producing. The goods shown include handsome styles of Portable Basket Grates, Brass and Wrought Iron Andirons, Brass and Iron Fire Sets and Fenders, Coal Hods, Folding Screens, Spark Guards, Wood Baskets, Gas Logs, Fire

Place Dampers, Ash Pit Doors, Boiler Grates and Boiler Doors, together with some handsome styles of Bellows. The Ash Pit and Boiler Doors made by the company are a new design, and include a reversible pattern. They are held in position with detachable straps and flange of the door frame. In inserting these doors it is unnecessary to cut the bricks, as the straps are secured in the seams and the frames are of such dimensions that they come even with the course of the bricks.

THE LALANCE & GROSJEAN MFG. COMPANY, 19-21 Cliff street, New York, have issued, under date of November 1, 1901, a new and revised catalogue and price-list of their Agate Nickel Steel, Pearl Agate, Peerless, Blue and White, All White and Regal Steel Enameled Wares. The catalogue is of 136 pages, and is illustrated by numerous half-tone engravings, showing examples of the long line of articles in Enameled Ware manufactured by the concern. The various styles of ware are illustrated in colors. An exhaustive index at the end of the book is a useful feature. The present publication contains a number of new and useful articles that have been added to the company's assortment. Views of their immense factory at Woodhaven, L. I., their rolling mills and tin plate works at Harrisburg, Pa., and their handsome sample rooms in New York City are given at the beginning of the book. We are advised that the Lalance & Grosjean Mfg. Company and the National Enameling & Stamping Company have adopted uniform prices on all of their Enameled Goods.

W. J. BURTON & Co., Detroit, Mich., are sending out a circular to the trade giving information as to how the firm assist dealers to sell Burton's Fuel Economizer. The company state that they advertise in more than 1000 newspapers and other publications, and each advertisement refers prospective purchasers to the nearest dealer handling their goods. If no dealer in a town carries the Economizer and they are forced to sell the customer direct, they charge the consumer's price, which is about 50 per cent. more than the price to dealers, thus protecting the dealer. With each dealer's order they send catalogues, circulars and cards, and attractive hangers for the salesroom or show window, also an electrotpe for local newspaper advertising, if requested.

THE plant of the Brass & Copper Company, at Bloomsburg, Pa., which has been idle for the past few years, has been leased by the Sterrick Steam Cooker Company, who will adapt it to the manufacture of their Cookers.

THE AMERICAN WASHBOARD COMPANY's plant, at Cleveland, Ohio, was totally destroyed by a fire caused by a spark from a passing engine. The loss in machinery, stock and buildings amounted to about \$100,000.

Scrap Lead and Zinc.

By far the greater portion of the lead produced, says the *Lead and Zinc News*, is converted into white lead, red lead and orange material, which are used as pigments of paints, distributed over great surfaces in such thin coatings that their metallic contents is practically never recovered. A good deal of lead is manufactured into sheet, and a considerable portion into bullets, shot and other projectiles; and, though still remaining in a metallic form, it is so widely distributed in use as to cause it to be irrecoverable in the form of scrap. A portion of the lead product used as sheet lead and pipe does come back into the market, but the portion of lead used in these ways is comparatively small as compared with the other uses of the metal.

The consumption of zinc is largely in galvanizing steel or iron sheets, in the manufacture of brass, as sheet zinc and as the oxide of zinc used as a pigment in paint. That portion of the metal which is used in galvanizing is distributed as a thin covering over a large surface of iron, and the metal is entirely lost in the oxidizing and general disintegration of the zinc sheet. It has never been attempted to recover the zinc from galvanized iron. Zinc which is manufactured into brass, in the proportion of one-third zinc to two-thirds copper, remains in a permanent form, which is often available for new use as scrap brass, and, next to iron and steel, is the largest commodity in the scrap metal market.

A Crude Oil Portable Heating Furnace.

The furnace herewith illustrated is one of a variety of furnaces which have been placed on the market by the Union Drop Forge Company, 64 East Ohio street, Chicago. These furnaces embody a method of burning crude oil for fuel which was developed in the works of this company for their own special purposes. The distinctive feature of this system consists in vaporizing the oil with an air blast, the arrangement for doing which is complete in the burner itself. The blast is furnished by an ordinary blower, the pressure found most effective being about 8 ounces.

The burner, Fig. 2, devised for this purpose is simple in its construction and consequently cannot easily get out of order. It consists of a hollow or chambered casting, with passages for oil and air at one end and a nozzle at the other. The oil is delivered in the center of the chamber through a small pipe. Projecting over the orifice of this pipe inside the chamber are three pins which are so placed as to almost touch at the center of the orifice and which cause the oil to be broken into

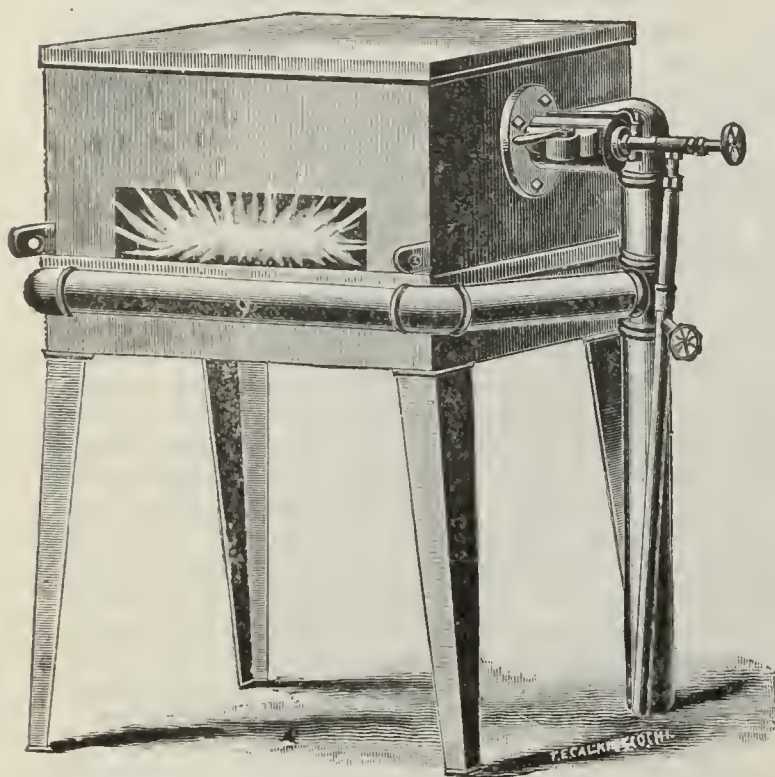
to provide a thoroughly practical method of teaching the principles and practice of effective advertising. Classes are held on Wednesday and Friday evenings from 7.30 to 9 o'clock, the instruction being given at a comparatively moderate cost. The facilities which are offered by this course will no doubt be appreciated by many young men entering business, as well as by others who are engaged in any business which requires the aid of advertising for its success, and there are few lines of business nowadays that do not use this means for extending trade.

The Shawinigan Falls Aluminum Plant.

On Saturday, October 19, the new aluminum plant of the Pittsburgh Reduction Company, at Shawinigan Falls, was formally started. The works of the Shawinigan Water & Power Company are so far completed that the power station from which power is supplied to the Pittsburgh Reduction Company was formally put in operation, and aluminum is now being manufactured in the Dominion of Canada.

The Shawinigan Falls development is effected by means of a canal about 1000 feet long, 100 feet wide and 20 feet deep at low water, by which the water is conducted to a forebay, from which the water is conducted in steel tubes 9 feet in diameter. Three of these tubes are now in place and three are in process of construction. There are two power houses situated at the foot of a fall of 125 feet.

The power house from which the Pittsburgh Reduc-



CRUDE OIL PORTABLE HEATING FURNACE.

particles, or scattered. The air passes into the chamber through a much larger opening and completely surrounds the oil pipe, thus thoroughly mingling with the oil as it is discharged into the burner. The chamber has its diameter enlarged toward the nozzle, but at the nozzle it is considerably reduced. This causes the flame to spread and be diffused over a wide area, completely filling the interior of the furnace to which the burner may be attached.

These furnaces are built for forging, annealing, hardening, or for other purposes in which iron or steel is to be heated. The same system is also adapted to burning crude oil in raising steam. In burning the oil on a large scale, it is vaporized by a jet of steam delivered to the burner from the boiler. The company have found in using this system that they are securing remarkably economical results as compared with the process of reducing or making gas through any intermediate method of treatment. The use of their burner insures a perfectly regulated fire, thus affording greater uniformity in generating steam for boilers or heat for forges and furnaces than with coal.

We have received from the Peirce School of Philadelphia an attractive pamphlet setting forth the advantages offered by the new course in advertising which has been begun at that institution this season under the direction of E. St. Elmo Lewis, an advertising specialist of that city. The course, as outlined seems

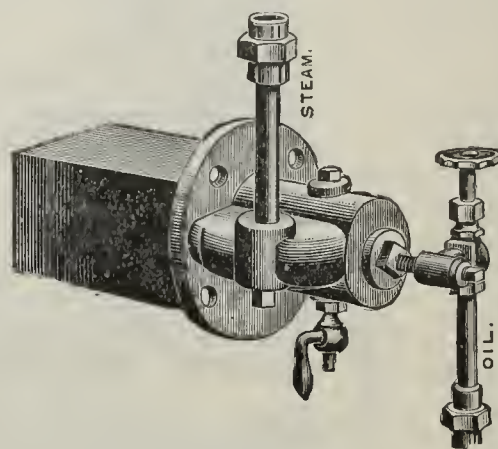


Fig. 2.

tion Company obtain their current contains two water wheels of 3000 horse-power capacity each, made by the Dayton Globe Iron Works of Dayton, Ohio. To each of these wheels are connected two direct current 300-volt generators of 1000 kw. capacity. The current generated by these machines is conducted over aluminum conductors, running through an inclosed passageway to the Pittsburgh Reduction Company's works, located on the hill about 175 feet above the power station and 400 feet distant.

In the main power station of the Shawinigan Water & Power Company there are two of the 5000 horse-power generators erected, while two of the largest water wheels ever built are being erected. These wheels each have a capacity of 6000 horse-power under a head of 125 feet, and are made by the I. P. Morris Company of Philadelphia.

About $\frac{1}{2}$ a mile from these power houses is the mill of the Belgo-Canadian Pulp Company. The Shawinigan Water and Power Company will supply this mill with water by means of a development separate and distinct from the canal above mentioned. This water will be taken from the river $\frac{1}{2}$ a mile above the power canal and discharged into the Shawinigan River, which empties into the St. Maurice River, below the falls. This development is under construction.

The officers of the Shawinigan Water & Power Company are: President, J. N. Greenshields, Montreal; vice-president, John Joyce, Andover, Mass.; secretary, R. W.

Douglas, Montreal; treasurer, J. E. Aldred, Boston, Mass.; chief engineer, Wallace C. Johnson, Niagara Falls, N. Y. The capital of the company is \$6,000,000.

Decision on Aluminum Patents.

Judge Hazel has rendered his decision in one of the most important cases ever heard in the United States Court of the Western District of New York. In the decision Judge Hazel dismisses the action brought by the Electric Smelting & Reducing Company against the Pittsburgh Reduction Company of Niagara Falls. The action was an equity proceeding brought against the Pittsburgh Reduction Company for an alleged infringement of a patented process for cheaply separating aluminum by the use of electricity. It was begun in Circuit Court, April 6, 1897, and was argued the following December. In the complaint it was alleged that the Pittsburgh Reduction Company, in all of their plants, one in Pittsburgh and two in Niagara Falls, infringed two patents relating to the reduction of metal from an ore by the use of an electric current, which patents were owned by the complainants. Many expert witnesses were sworn, and the exhibits made were numerous. The testimony taken amounted in all to over 3000 printed pages.

In his decision Judge Hazel held that the defendant company did not infringe the patents of the plaintiff, which, in effect, means that the Pittsburgh Reduction Company will be allowed to continue the manufacture of aluminum. As this company can make the article by their process much cheaper than by any other known process, it follows that the company practically have a monopoly of the manufacture of aluminum.

Judge Hazel's decision is set forth in 40 typewritten pages, and in it he reviews the case at great length, going over much of the testimony, cites many opinions of other judges, and gives a brief history of the reduction of metals by electrolysis. The two patents owned by the complaining company were issued to the inventor, Charles C. Bradley, in 1892. They relate to a process of reducing highly refractory and non-conducting metallic ores in a fused state by electrolysis—that is, by subjecting the ore or compound to an electric current, to fuse it and, while in fusion by action of the current, to separate or decompose the fluid mass so that the metal contained in it will be deposited at one of the two poles of the electric heater. Three clauses of one of the patents cover the process broadly. Three others of the same patent cover specifically the process to be used in the reduction of aluminum. The other patent covers a special mode of practicing the process.

The defense made various answers, among which was want of novelty in the patents. The alleged infringement was denied. The Pittsburgh Reduction Company said that they worked under a patent given in 1899 to an inventor, C. M. Hall. The two processes covered by the three patents are very similar. In fact, the suit just decided may be looked upon as a return suit, for shortly before the present one was started the Pittsburgh Reduction Company sued the Cowles Smelting & Aluminum Company in an attempt to get damages for and stop the infringement of the Hall patent. The Cowles Company were the predecessors of the Electric Smelting & Aluminum Company. Nothing was accomplished by the suit, except that various technical terms were defined, and there was established a fixed meaning that greatly aided in the trying of the present case.

The opinion states that the Bradley process was never put into practical operation. The complainant argued that Bradley was the pioneer in that field, and so was entitled to many benefits and everything relating to the process. But to quote from the opinion:

"Hall, ambitious, vigorous and intellectually strong, experimented and produced a process in aid of decomposition of refractory ores not contemplated by the complainants' patents."

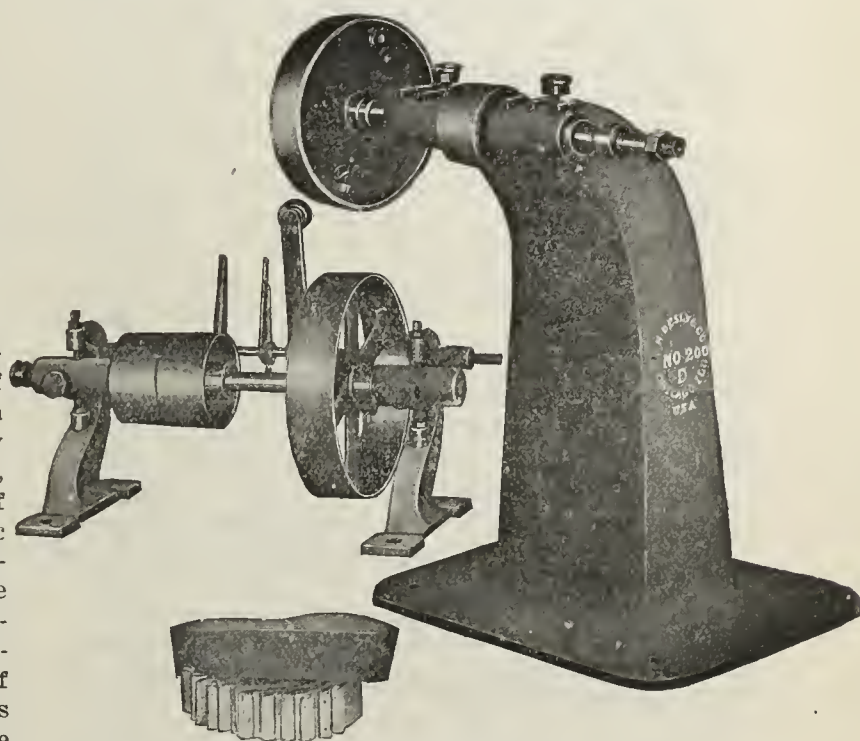
It was stated in the opinion that the entire consumption of aluminum in the United States is supplied by the Pittsburgh Reduction Company; that in 1886 the price of aluminum ranged from \$5 to \$8 a pound, that in

1897 the price was about 25 or 30 cents a pound; that at first, when the Pittsburgh plant of the defendant company was started, only 50 pounds were produced daily; that soon afterward two large plants were built in Niagara Falls, using a total of 6000 electrical horse-power and producing daily 9000 pounds of aluminum.

In reaching a decision Judge Hazel was guided somewhat by the previous suit. He held that Hall's invention was not an alteration of Bradley's process, and that one ingredient in the chemical bath used had not been substituted for another. The decision was extremely technical. Judge Hazel went to great length in studying both processes for the reduction of aluminum.

The Besly Band Polishing Machine.

The new band polishing machine built by Chas. H. Besly & Co., 10 North Canal street, Chicago, has a very desirable form of stand, as it permits the operator to be seated while at work. The illustration shows not only the machine proper, but the countershaft and a dozen assorted emery cloth bands. These machines are so made that a single band wheel can be used, or they can



The Besly Band Polishing Machine.

be fitted with a double spindle so that two band wheels may be used, or a band wheel can be placed at one end and a regular buff or emery wheel at the other end of the spindle.

The band wheels recommended to be used on this machine are made of semisteel castings, and when an elastic surface is required they are covered with felt. The emery or other abrasive material is applied to the wheel on a cloth band which may be tightened firmly around the wheel. To reset the wheel or change the grade of emery, it is merely necessary to remove the band and replace it with another, the operation requiring only one or two minutes. The Besly band wheels are made with cushioned or with hard finish, whichever may be desired.

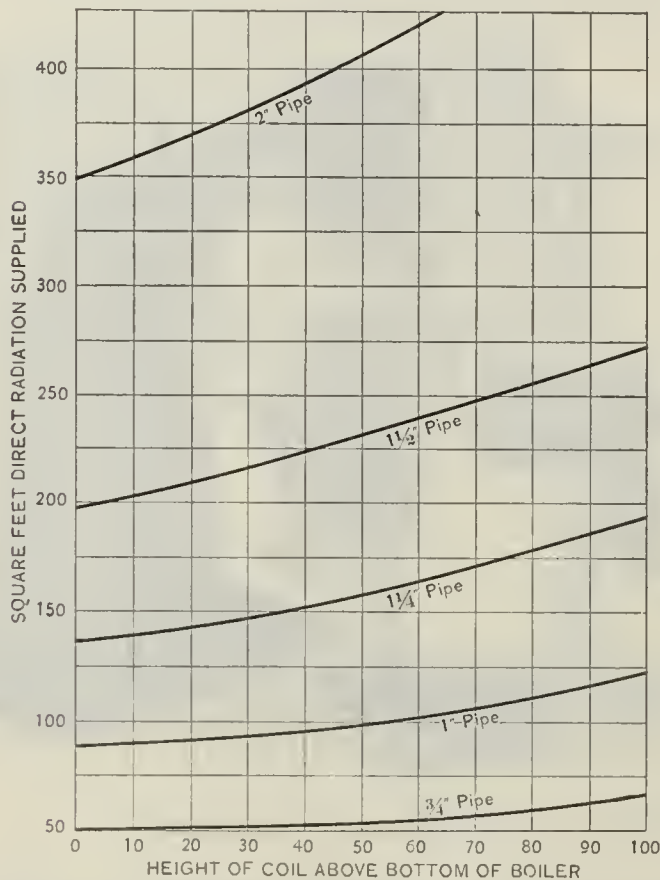
In operating this machine the work is held under the wheel by the operator. The wheel will work up sharp corners, being especially advantageous on die work. The assortment of emery cloth bands furnished with each wheel consists of eight or ten different grades.

THE EMPIRE METAL COMPANY, Syracuse, N. Y., are putting out a new Solder for Aluminum, which they claim to do the work with efficiency. The Solder is described as being of the same color as Aluminum, as durable, tough and strong, flowing smoothly and adhering firmly. It needs no flux and can be handled easily with an ordinary soldering iron or blow pipe in the same manner as common tinner's Solder. It also solders Brass as well as Aluminum.

Hot Water Heating.

BY E. T. CHILD.

Of the many details to be considered in designing a hot water heating system, the first to receive attention is naturally the size of the radiators to be used. If the water temperature for an open system is assumed at 180 to 200 degrees F., with a temperature of 70 degrees F. in the room, the difference of temperature of air and radiating surface is 110 to 130 degrees F. Allowing 2 British thermal units for each square foot of radiator surface per hour for each degree of difference between water and air gives a radiating power of 220 to 260 British thermal units per square foot of surface. If this result is compared with low pressure steam work, a logical conclusion may be reached. Assuming steam at 5 pounds gauge pressure, or 227 degrees F., and air at 70 degrees, the difference is 157 degrees, and on the same basis each square foot will evolve 314 British thermal units per hour. Then, using 180 degrees as the water temperature, 314 square feet of water surface



Hot Water Heating.—Fig. 1.—Chart for Determining the Size of Pipes.

will equal 220 square feet of steam surface, which shows it to be about 70 per cent. as effective.

In *The Metal Worker* of November 11, 1899, a comparison of methods for calculating steam radiating surface is given. As the different rules show such a diversity, let us assume that 1 square foot of steam radiating surface will heat 60 cubic feet of space. Then a hot water radiator will heat 70 per cent. as much, or 42 cubic feet. This factor is about the average of figures given by various authorities.

For indirect work there seems to be a general agreement that it requires 50 per cent. more radiating surface than is required for direct. It may be shown that this allowance is ample by a simple illustration.

Assume a room containing 4200 cubic feet of space. This for direct radiation will require 100 square feet of radiating surface. If an indirect coil is used an allowance should be made to change the air in the room at least four times an hour, making 16,800 cubic feet to be heated from 0 to 70 degrees, over and above what would be done by the 100 square feet of direct coil. To heat this volume from 0 to 70 degrees will require, omitting intermediate figures, about 22,000 British thermal units, which, added to the work of 100 square feet of direct radiating surface at 220 British thermal units

per square foot, will aggregate 44,000 British thermal units per hour for the indirect stack. On account of the higher velocity of air flow, and lower entering temperature of air, each square foot of indirect coil will radiate more heat than direct, and it is safe to allow 330 British thermal units per square foot, instead of 220 in the case of direct; therefore an indirect radiator containing 133 1-3 square feet will be required. Of course, a great deal depends upon the entering temperature, velocity of flow and rate of air change, and 50 per cent. is a safe figure to allow.

Having determined upon the radiator sizes, the next thing in order is pipe connections. A great deal de-

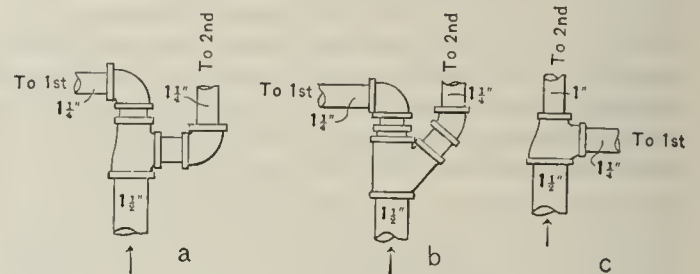


Fig. 2.—Proper Branch Connections.

pends upon the height of the radiator above the heater and the capacity of a pipe to supply radiators increases as the difference in level changes. This is clearly shown by the chart given in Fig. 1, which has been plotted from figures given by the Nason Mfg. Company. The radiator location should be borne in mind. If it is at the end of a run the pipe should be kept full size to allow for the extra distance. The use of large radiators requiring larger than 1 1/2-inch pipe should be avoided. The main pipe should be allowed at least 1 square inch of area for each 100 square feet of direct surface.

In arranging runs of piping each installation should be made a special study. It is necessary to first locate all the radiators, then the heater, and lastly they must be connected in the most direct manner possible. Radiators on different floors should be so placed that a single riser may feed two or more, and all horizontal runs should be as short as possible. No horizontal run should have a pitch less than 1 inch in 10 feet, and if the head room available is sufficient it would be well to grade the runs steeper. Sometimes horizontal pipes are run one size larger than the risers. In taking off branches care must be taken that one will not rob another. This is particularly liable to happen in the case of a straight run to the floor above, and may be avoided by using a smaller pipe to the upper floor, as shown in Fig. 1 by C, or by taking the connection off on one side, as in Fig. 1 at A, and Fig. 4. Do not make two con-

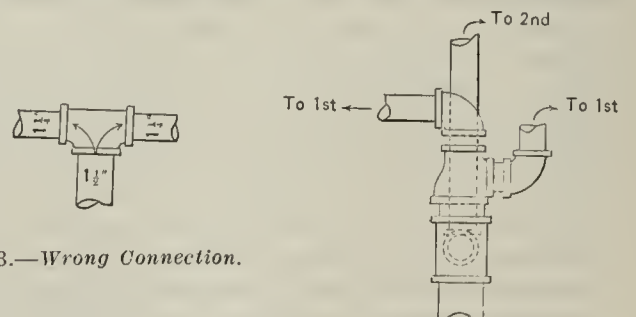


Fig. 3.—Wrong Connection.

Fig. 4.—Connection for Favoring Radiator on Lower Floor.

nections from a tee to two radiators, as in Fig. 3. Instead, use any one of those shown in Fig. 1.

The expansion tank may be connected up in several ways. One is to connect the bottom of the tank by a separate line direct to the bottom of the heater; another is to connect to the return after it has left the last radiator on the line nearest to the tank. Sometimes both flow and return are connected to the bottom of the tank, as in Fig. 5. The tank should set at least 2 feet above the top of the highest radiator, and as much higher as

possible. It should be large enough to hold at least one-twentieth of the water in the entire system, as water on being heated from 40 to 212 degrees will expand one-twenty-fourth of its volume. A vent pipe should be provided, with an overflow pipe. Fig. 6 shows the most desirable arrangement for piping an expansion tank. This makes the tank to a certain extent a radiator, and prevents all possibility of its ever freezing. The proper connection of the expansion tank is most

diators, but the connection shown by Fig. 7 is preferable.

3. The regular two-pipe system, in which the flow and return pipes are both run in the basement, and are graded back to the heater, the branches being run from the main upward, and the radiators fed on the rise. This last is the system most commonly employed and it is admitted to be satisfactory. The greatest objection is its larger first cost. It gives a free circulation, but is liable to develop inequalities due to small errors in design and construction.

The second system is claimed by many to be superior to all others, and under certain conditions it certainly will work most satisfactorily. If there is no objection to running the pipes on the attic or top floor ceiling the principal difficulty will be overcome. This system may be used for high pressure hot water or low pressure steam heating, or it may be used for low pressure hot water heating with an open tank. It is possible to fit the radiators with a single connection from the drop pipes, but it is more satisfactory to use a special radiator, as shown in Fig. 7. Butterfly valves, or gate valves, are most satisfactory for hot water work, as they offer less resistance than globe valves. Fig. 8 shows the disadvantage of a globe valve.

The one-pipe system is least to be recommended, as it is very slow to circulate, and therefore could not be relied upon in an emergency, nor with large work having many connections.

Another important factor to be considered is the heater size, including grate area, heating surface and smoke pipe or chimney area. This selection is no doubt in a majority of instances left to the manufacturer, but it is none the less important that the contractor should be well posted and know what he needs.

The heating surface of a hot water heater should equal from 10 to 12½ per cent. of the radiating surface, although on small installations it may run as high as 15 to 20 per cent. Kent gives a factor of 1 square foot of heating surface to 5 square feet of radiating surface, while the factors given by Carpenter vary from 1 to 6.8 on 250 square feet of radiation to 1 to 10.5 on 10,000 square feet of radiation.

The grate area should vary from 1 square foot to every 30 square feet of heating surface on a small heater for approximately 500 square feet of radiation to 1 square foot to every 40 square feet of heating surface on a very large heater. The smoke pipe should be allowed about 30 square inches for each square foot of grate surface. Following the above rules, 1000 square feet of radiation will require 125 square feet of heating surface, the grate area will be 4.16 square feet, and the smoke flue 125 square inches, or approximately 13 inches in diameter. Ten thousand square feet radiation will require 1000 square feet heating surface, the grate area will be 25 square feet and the smoke flue 750 square inches, or 31 inches in diameter. With the above rules in view, it will be an easy matter to decide upon what it is necessary to provide between these two limits.

FRED. BROOKS, an employee of the Brooks Plumbing Company of Des Moines, Iowa, met his death on October 24 from suffocation, being buried in a sewer trench which he was digging. The soil was of a sandy character, and while he was working 10 feet below the ground the walls caved in. Although a number of men immediately set to work digging him out, he died on being brought to the surface of the ground. He was 24 years old and had been married but five weeks.

THE new plant of the Eastern Tube Company, at Zanesville, Ohio, is practically completed and is in operation. This concern are prepared to turn out tubes from ½ to 16 inches in diameter. Their plant is a large one and has modern equipment throughout. The general offices of the concern are in the Pittsburgh Bank for Savings Building, in Pittsburgh, with C. E. Corbett, general manager, in charge. The officials of the company are: F. A. Beall, president; E. C. Card, treasurer, and Joseph H. Beall, secretary.

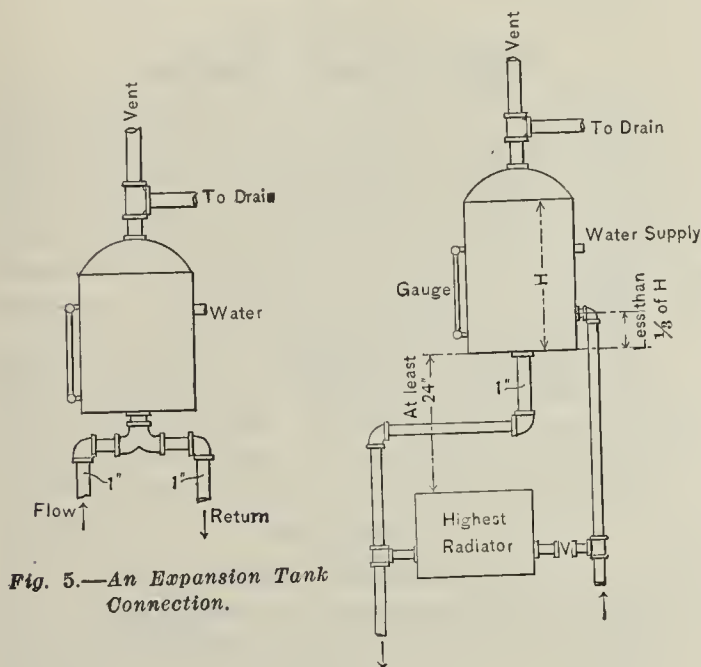


Fig. 5.—An Expansion Tank Connection.

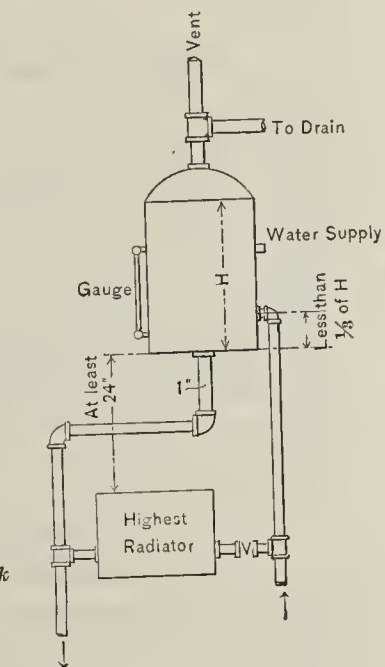


Fig. 6.—A Circulating Connection to Expansion Tank.

important, and the method shown in Fig. 6 is by far the best.

A discussion of the various systems of piping will no doubt bring forth varied opinions, and probably leave the reader to draw his own conclusions. There are three systems to be considered: 1. The one-pipe system, in which the main is kept of the same size all around the cellar, the flow connections being taken off from the top of the main, and the returns being brought back into the side of the same main. The main pipe is carried straight up from the heater to the highest point in the cellar, and is then run either dead level, or pitched slightly downward to the end where it is returned to the bottom of the heater.

2. The complete circuit or drop pipe system. This was described by Peclet as used in France in 1830,

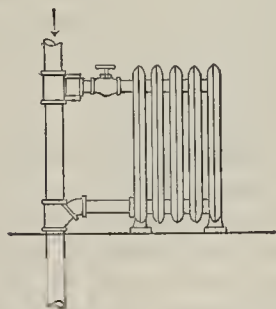


Fig. 7.—Method of Connecting Radiator to Drop System.



Fig. 8.—Showing Disadvantage of Setting Globe Valve with Stem Vertical.

was used by Perkins in England about 1840, and in this country it is spoken of as the "Mills" system. In this system a main, or several mains, are carried to the top of the building, where all the horizontal pipes are run, either in the attic or on the top floor ceiling, and the radiators are fed by drop pipes, which continue down to the basement, where they are brought together into a main return, which is run to the bottom of the heater. Sometimes the drop pipes are so arranged that all the circulation must pass through the different ra-

Central Supply Association.

The annual meeting of the Central Supply Association was held in Chicago last week, when, after transacting the routine business and admitting to membership J. J. Ryan & Co. of Chicago, and the Cleveland Plumbing Supply Company of Cleveland, Ohio, the following officers were elected for the ensuing year:

President, E. A. Morris, Detroit, Mich.

First Vice-president, A. F. Gartz, Chicago, Ill.

Second Vice-president, J. B. Rahm, Omaha, Neb.

Treasurer, E. T. Niedecken, Milwaukee, Wis.

Secretary, Paul Blatchford, 1610 Ashland Block, Chicago, Ill.

Executive Committee.

E. A. Morris, Detroit, Mich.

A. F. Gartz, Chicago, Ill.

J. B. Rahm, Omaha, Neb.

E. F. Niedecken, Milwaukee, Wis.

N. O. Nelson, St. Louis, Mo.

John W. Wolff, Chicago, Ill.

G. H. Merkel, Cincinnati, Ohio.

Theodore Ahrens, Jr., Louisville, Ky.

Representatives in National Committee of Confederated Supply Associations.

N. O. Nelson, St. Louis, Mo.

A. F. Gartz, Chicago, Ill.

Francis J. Torrance, Pittsburgh, Pa.

A. D. Sanders, Chicago, Ill.

John Walker, Detroit, Mich.

Alternates.

Theodore Ahrens, Jr., Louisville, Ky.

G. H. Merkel, Cincinnati, Ohio.

D. F. Sullivan, Dallas, Texas.

J. M. Young, Pittsburgh, Pa.

L. C. Huesman, Union City, Ind.

The next meeting of the association will probably be held at Cleveland, Ohio, in February.

Lamb & Ritchie's Pan-American Exhibit.

A novelty which has attracted considerable attention at the Pan-American Exposition is exhibited in Section 25 of the Machinery Building by Lamb & Ritchie, Cambridgeport, Mass. It is tin lined or lead lined wrought iron pipe, in which the lining is not only thick enough to constitute a substantial inner pipe, but is also inseparable from the iron. The inclosure of the section is attractively made of pipe, and some 10-foot lengths are stacked up at the back, while others are suspended in such a manner as to allow electric light to show the polished surface of the tin lining. Samples are shown bent and coiled and there are sections of pipe twisted to prove that the lining is inseparable from the pipe. Neither bending nor hot water, it is stated, will cause the pipe and lining to separate; and this, we are advised, has been established beyond question by nearly two years of actual use under the most trying conditions.

Mott's Imperial Victorian Solid Porcelain Fixtures.

A conspicuous feature of the many attractions at the Pan-American Exposition at Buffalo, N. Y., for those who delight in furnishing their homes with handsome plumbing fixtures was the exhibit of the Imperial Victorian solid porcelain bathtubs, lavatories, seat baths and closets made by the J. L. Mott Iron Works, Beekman and Cliff streets, New York. These fixtures were shown to the best advantage in a model bathroom finished with exquisite taste, and it is not strange that the company were awarded a gold medal by the commissioners for their exhibit. The goods displayed are of the same general character as those receiving a similar award at the Paris Exposition, where they attracted attention which has resulted in large orders from several foreign countries.

From being large importers of foreign made solid porcelain ware in the past, the J. L. Mott Iron Works have become exporters of a far handsomer product from their own factories at Trenton, N. J. A feature of the American made goods is the absence of the oppressive bulk and clumsiness of European goods. A characteristic peculiar to them is a grace in contour and beauty in the ornamental shapes produced, which effectually destroys excessive massiveness, and contributes a strik-

ing attractiveness that has already created a demand for them from the architects of fine residences and from their clients. The bathtubs are made in a variety of styles and shapes, with underglaze decorations and ornamental relief work of artistic merit. The lavatories are made to stand out apart from the walls and in shape, design and ornamentation are equally attractive. The closets and other fixtures have an appearance in keeping with these handsome productions. These goods have a pure white finish of high gloss and great smoothness that adds greatly to their general beauty.

FORCED BLAST HEATING.

A paper which was read a short time ago before the New York State Medical Society by Dr. Henry Reed Hopkins of Buffalo, chairman of the Committee on Hygiene, on the subject of heating and ventilating school buildings, in which the fan system of ventilation in use in the schools of Syracuse was discussed, displayed a strong opposition to such heating systems. Among other things Dr. Hopkins is reported to have said:

The fan system of ventilation is a failure in inlet work, a more pronounced failure in outlet work, a failure in diffusion, a failure in displacement, a failure in the removal of air borne excrement, a failure in the removal of carbon dioxide. That 141 different observations made in the rooms of seven schools showed not one instance of efficient ventilation as measured by motion of air at the outlets, and that in the tests of 196 different rooms of nine schools there was found 165 failures, as indicated by carbon-dioxide, and, further, that in the rooms found to have adequate ventilation 0.53 of such ventilation was due to accidental causes—to the motion of air independent of either inlets or outlets. That this is a question of great importance, inasmuch as the matter of ventilation of school rooms is not only one of comfort and convenience, but is essential to the preservation of health.

That the fan system is a demonstrated failure as an air supply, entirely lacking in uniformity and quantity and diffusion, as complete a failure in performance as it is absurd in principle, the surprise being that sane men would ever undertake to supplant and displace the simple method of natural air supply by anything so complicated and artificial as the fan system; remembering that to human beings air supply is at once a comfort and convenience and essential to health, and is also an instant, constant and immediate necessity to the maintenance of life.

That ideal school ventilation and air supply is a scientific question of absorbing interest, not alone because of the intricate questions of physics, chemistry and physiology involved, but also in view of the fact that the tender, delicate and susceptible children of to-day, with their fearful liability to disease, liability to arrest of development of body, soul and spirit, are to-morrow the people.

It is unfortunate that such statements should be made in reference to a system of heating which is increasing in popularity, not only in the United States, but in England, France and Germany. In all these countries the best engineers, having long since passed the experimental stage, agree that forced blast heating has demonstrated its excellence and established its position among modern methods. That all blower systems of heating have not equally well accomplished the desired result is due rather to faulty design and detail than to the system itself. It has been the experience in every field of engineering that wherever excellence has been obtained many attempt to utilize the necessary apparatus without fully understanding the underlying principles. In these cases it is but natural that their application of the principles should result in faulty apparatus and failure to duplicate the success attending the operation of the best systems. While the arraignment of this system above given may be of interest, it is doubtful if this broad condemnation will act as any serious check to the forced blast branch of the heating industry.

R. G. PARSONS, secretary of the Board of Public Works of Buffalo, N. Y., will receive bids until November 7 for the roofing, plumbing and gas fitting of a two-story building to be occupied by the crew of a city fire boat.

Michael Carney.

Michael Carney, well known throughout Northern New York as a prominent heating contractor and hardware merchant, died on Friday, October 25, at his home in Philmont, N. Y., at the age of 52 years. Mr. Carney had been a sufferer from asthma for a number of years, and that, combined with a severe cold which he contracted, developed into pleuro-pneumonia, causing his death. He was born in Ireland and at the age of nine years came to this country, receiving his early education in the public schools of Hoosick, N. Y. He served an apprenticeship at the plumbing and steam fitting trades in North Adams, Mass., where later, as a journeyman, he worked for a considerable time. He left North Adams and went to Albany, N. Y., and there with Perry & Co., stove manufacturers, he developed into an overseer of exceptional ability. In 1880 he engaged in the heating and hardware business in Philmont, N. Y., where a steady, healthy business growth rewarded his industry and fair dealing. Nearly every heating plant of importance installed in Columbia County during the past five years was his work. Mr. Carney is survived by two sons and a daughter. The funeral, which was in charge of Hudson Council, 316, Knights of Columbus, took place from the Sacred Heart Church, Philmont, and the interment was made at that place. Wm. E. Carney, son of the deceased, continues the business.

Pierce Sanitary Specialties.

The Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., have issued a new catalogue of 64 pages, covering their line of bathroom specialties. In the introduction the company impress upon plumbers, architects and others that they are prepared to furnish everything in the line of plumbing and sanitary goods for equipping fine residences, and that they make, as well, a line of heating boilers and radiators. The first section of the catalogue is devoted to solid porcelain bathtubs of French and Roman patterns, the Roman pattern being shown both on feet and on the base. These are followed by several styles of high grade roll rim porcelain enameled bathtubs and the Onondaga Junior, a steel clad copper lined bathtub. Handsome marble lavatories, with brackets and legs made in various designs and equipped with a variety of styles of supply and waste fixtures and traps occupy another section of the book. A line of water closets shown includes wash down and siphon jet closets, made with both high and low flush tanks, and with the company's new vertical vent connection. In the last part of the catalogue attention is given to bathroom fittings of nickel plated brass, including supply and waste fixtures for bathtubs and lavatories with traps, supply pipes and air chambers, lavatory legs, basin cocks, chain stays, flush and supply pipes, tanks, seats and brackets, as well as a great variety of towel racks, sponge and soap holders, bathtub seats, tooth brush holders and mirrors. The catalogue closes with a well arranged index.

Eccentric Fittings and Their Uses.

The eccentric fitting, says the London *Ironmonger*, is as yet comparatively novel, and its varieties are confined to three—viz., the eccentric reducing socket, bushing and tee. An eccentric tee may be used where no other fitting would answer the purpose. One was used where a 3-inch one-pipe horizontal hot water main circuit had its highest point tight against a ceiling and its 1½-inch expansion pipe had to come there. This pipe could not be carried away vertically at once, but had to go horizontally (with a slight rise) for about 10 feet. Had an ordinary reducing tee been used the expansion outlet would have come central, and therefore would not have released the air along the upper part of the pipe; but with an eccentric tee, with the outlet out of the center (eccentric), and level with the top of the pipe, the 1½-inch horizontal expansion pipe took all the air from the 3-inch main.

When reducing horizontal hot water mains, for any reason, it is most desirable to use a reducing socket

with the small opening out of the center, with its top edge level with the upper edge of the large opening. By this means the upper line of both the small and the large pipes are brought level, and the air passes along just the same as if all the pipe were of one size. This is not necessary when there is a vertical branch on the large pipe close to the reducing point, but otherwise it is important.

With steam work these reducing fittings answer an equally useful purpose, only that they are required to drain away condense water instead of providing means for air to escape. Consequently they are used with the small opening low down instead of high up, so that the bottom edges of both pipes are in a line, and not the top edges.

Golf In the Heating and Plumbing Trade.

For some time past the supply trade in the heating and plumbing field in Chicago have enjoyed the preparation for a golf tournament, which was completed at West Hinsdale, on October 25. There were 42 contestants and a goodly number of admiring friends assembled in the golf gallery to lend *éclat* to the event. Prizes in the shape of three handsome cups inspired the "lofters" to "put" themselves in 18 holes, with the greatest possible expedition and the least possible "swats." The cups were donated, respectively, by the Kewanee Boiler Company, the *Engineering Review* and *Domestic Engineering*. Another cup was won by D. E. McCabe of the International Heater Company, who can probably locate the donor. He averaged nine "swats" to the hole, yet his industry did not seem to win the honor accorded to S. O. Dugger of the Western Tube Company, who could only put four and seventh-ninths "swats" into the hole, which was about the size of a tomato can. However, Mr. Dugger got both of the newspaper cups, while C. K. Foster of the American Radiator Company played an "ideal" game, and scooped the Kewanee Boiler Company's prize.

There are some who feel satisfied that the same winners cannot do it again, and among them is J. B. Rahm of Omaha, Neb., and the medal winners, F. H. Lindenberg, John D. Hibbard, E. H. Raymond and George H. Bailey. The tournament was so thoroughly a success, and so fully enjoyed, that it is probable that another will be held early next season. This is said to be the first contest of the sort where all the competitors were from one trade, and S. O. Dugger, who was the originator of the project and chairman of the committee that made it a success, is being congratulated by his many friends on the pleasure they have derived from the event.

Death of New York Plumbers

Three well-known members of the Association of Master Plumbers of New York have died lately. John J. Santry, treasurer of the Richmond branch of the association, passed away last week. His funeral services, which took place October 25 from his late residence in New Brighton, Staten Island, were largely attended by many of his friends and the members of organizations to which he belonged.

Andrew J. McCarthy, formerly foreman for John Tucker, and lately in business at Park avenue and Fifty-eighth street, was buried from St. Francis de Sales Church on October 31. The master and journeyman plumbers of the city were well represented at his funeral.

Michael J. McDermott, president of the Bronx Borough branch and also of Manhattan branch of the association, died suddenly last Wednesday morning at his residence, 1791 Bathgate avenue. The funeral services will be held at St. Joseph's Church, Washington avenue, on November 2 at 9.30 a.m. Mr. McDermott was active in Democratic politics in the Bronx and was a member of the General Committee of Tammany Hall, besides belonging to several clubs.

T. J. Cronin has moved his plumbing establishment to Binghamton, N. Y.

Plumbing and Lead Work in the Olden Time.

In an address recently delivered by the president of the Royal Institute of British Architects, says the *Decorators' Gazette and Plumbers' Review* of London, the speaker referred to what apparently at the present day was the main requirement at the hands of the plumber—viz., the wiping of joints so that they may be air tight, and that the health of the community should not be lowered by the exhalations from faulty pipe connections. At the same time he deplored the fact that there are no evidences at the present day of the skill of the plumbers of the olden time, who embodied in their work the beauties of nature and art. He referred to his early impressions as a boy, when studying the exhibits in the plumber's shop window was one of his greatest delights; for in it were beautifully ornamented cisterns, lead vases, lead statues and ornamental lead plaques for dates and inscriptions, not to speak of the quaint, if not beautiful, rain water pipes and heads. All this had departed; and certainly every architect and every person of taste is anxious to see it revived. Some of the walks in Hampton Court Gardens are still adorned with leaden statues and leaden vases, and at the time of which he spoke the gardens of the great merchants in the city were adorned in the same manner, and very often with lead fountains, too.

In the Middle Ages and in the early Renaissance considerable portions of buildings then erected were ornamented with leaden crestings on the roof; there were lead tops to pinnacles and lead sockets to weathercocks, and the lead work to the lights was made in beautiful or curious patterns. He did not know why all these charming applications of design should be utterly laid aside and forgotten for more utilitarian objects. The exercise of the artistic part of the craft must surely give more pleasure and pride to the craftsman than the mere wiping of a joint or the beating out of a cesspool, however well done, besides the interest and pleasure that it causes to the public.

That the plumber of to-day, so far as being an artistic craftsman in lead work, is behind the plumber of the olden time there is no denying. In the early ages of civilization he was an important factor, but in the present utilitarian age, when machinery has taken the place of the human artificer, the average plumber's practical acquaintance with lead work goes little further than wiping a joint, adjusting a pipe or lining a tank. All the other work in which the plumber is interested comes ready made to his hand, needing only his skill in the arrangement.

EARLY USE OF LEAD.

The work of the plumber seems to have been the earliest application of human ingenuity to the working of metals. The use of lead is mentioned in the books of the Old Testament, and among the Egyptian fishermen it was made use of to sink their nets, as at the present time. It was adopted as a material for covering roofs, and as far back as the building of the hanging gardens of Babylon by Nebuchadnezzar (B.C. 588) it was practically used in sheet form as a "safe" under the earth in the gardens to retain the moisture in the soil necessary for the sustenance of the trees and flowers. The casting of the lead into sheets for this purpose on beds of sand dates back at least to this period in the world's history, and the union of the sheets was effected by means of solder of the same composition as in present use, as recorded by Pliny, who does not, however, refer to lead burning, which probably was not known at that early date.

To conceive an idea of the magnitude of the work of providing lead "safes," so to speak, for the terraces composing the hanging gardens, some account of the magnitude of the undertaking should be given. As already stated, they were erected by Nebuchadnezzar about the time when the prophet Daniel was taken captive and brought to Babylon. The motive for their erection is given by historians as follows: Amytis, the wife of Nebuchadnezzar, was a Mede, and was accustomed before her marriage to the luxuriant hills and

forests of her own country. Babylon, on the contrary, was situated on an immense level plain, and the queen felt the depressing effect of the change of scene. It was to supply the loss in part that the king had the gardens constructed in terraces, one above the other, to the top of the city walls; and as history places these walls at 350 feet in height, the magnitude of the undertaking of casting the lead sheets necessary to cover the area of the gardens and to sustain the load of earth sufficient to fasten the growth of large forest trees may well create wonder at the present day.

WATER SUPPLY.

The main water supply for these gardens was procured from the river Euphrates, but the question of how it was raised, and what was the character of the hydraulic machine which effected it is still, so far as we know, unsettled. All that has been recorded is that "upon the uppermost of these terraces was a reservoir supplied by a certain engine, from whence the gardens on the other terraces were supplied" by means of lead pipes. What was the caliber of the vertical suction pipe of 350 feet in length used or the strength of the lead used in its manufacture history does not record, and we are left to adopt any theory which seems the most plausible.

There is no information extant as to the method adopted by the Babylonian plumbers in the manufacture of lead pipe, but as the plumbers of ancient Rome later on presumably followed the fashion of the earlier plumbers, we are enabled to afford some light in this direction. The pipes as made by the Roman plumber were made from sheet lead, the strips being cut and rolled so that the edges came together. These were then soldered and the pipe was complete. They were made in lengths of 10 feet and in various sizes, ranging from 1 to 12 inches in caliber, the weight of the sheet lead corresponding in thickness with the size of the bore and the strain it would necessarily have to bear.

It was also customary in cases where pipes supplied the baths of wealthy individuals to have the owners' names engraved on the pipes, and in other places the makers' names. Some idea may be formed of the extent of this pipe manufacture when it is stated on good authority that from one of the Roman aqueducts alone no less than 13,594 lead pipes of 1-inch bore drew water supply for as many buildings. The consumption of lead, therefore, must have been enormous in Rome at that period, and the work of the plumber correspondingly remunerative. It is also to be remembered that in addition to work in connection with water supply the plumber was kept busy as a roofer, lead being the principal roof covering in the East.

New York City Notes.

John McMillan has just finished the job of overhauling the entire plumbing in the Park Avenue Hotel, putting in all new lines and fixtures. He is also busy with the power houses for the elevated railroad, having the contracts for the two down town houses and one at 161st street and Third avenue.

* * *

A relic of old times is the desk chair used by John Byrns and which formerly was used by Mr. Philbin of Philbin & Quinn, the father of the present District Attorney.

* * *

Trade still continues brisk and with prospects of remaining so for some time. Among the jobs well under way is one on Ninth street west of Third avenue, where A. Reitmayer is plumbing two five-story flats. Samuel Lytle has two eight-story apartment houses in the same locality. Kelly Bros. of Amsterdam avenue are busy with three eight-story apartments on 107th street west of Amsterdam avenue.

SYMONS & RAE, architects, of Toronto, Canada, will receive bids until November 11 for central heating, power and electric plants for the Queen's University and School of Mines Buildings at Kingston, Ontario.

Sanitary Uses for Slate.

One of the first requisites for a material to be applied to sanitary purposes, says *Cement and Slate*, is that it must be impervious to all liquids, non-absorbent and capable of being readily cleaned. Any material that will absorb the liquids or gases that come in contact with it affords a resting place for impurities, and will in time become only a breeding place for all kinds of disease germs, thus defeating the very purpose for which it is used.

Some substances are given a smooth, non-absorbing surface artificially, which, while it lasts, will do all that is required of it in the way of keeping the utensil clean, but when once destroyed by cracking or otherwise is worse than useless, for it presents a better receptacle for filth than would an ordinary semi-porous stone.

It should be possible to clean the surface of all such materials used in what is known as sanitary construction easily and simply. For this purpose it is necessary that all such constructions be made with perfect joints and a polished surface. There are a few mineral products which answer these requirements. The first stone that was ever used extensively for this purpose was marble. This forms an ideal material in all respects but price. The difficulty experienced in quarrying it and the waste produced in preparing thin slabs of it for market are objections that will never be overcome. It is hard, fine grained and impervious to liquids and gases, but its price prohibits its use in any but the higher grade of buildings.

A material that seems to be designed by nature for use where a clean, non-absorbent surface is required is slate. It meets all of these requirements, combined with strength and durability, and can be made neat and even beautiful where adornment is required. The surface is smooth, therefore it will not absorb oils or odorous or decaying organic matter; it is not affected by acids, in which respect it is better even than marble. It is impervious to water, air and changing weather conditions, and not sensibly affected by ordinary variations in the degree of heat. These qualities are not found in any other mineral product, and, taken in connection with the ease with which it can be worked and its consequent low price when compared with other materials used for the same purpose, it is really economical as well as highly satisfactory to use slate slabs for sanitary purposes.

The more fully builders and contractors realize the fact that slate has made a place for itself in the interior fittings of the building, as well as upon the roof, the more satisfactory work will they be able to turn out. Slate has the merit and is not endeavoring to obtain a position by favor which it cannot maintain by excellence. That this is true is shown by the increased call for mill stock. Builders are everywhere waking up to the fact that, to be up to date, they must use the most serviceable as well as the most economical fittings for their buildings. In the case of the sanitary construction slate fulfills these conditions.

Among the various uses to which slate is put for this purpose are bathtubs, urinals, wash trays, kitchen sinks, dairy uses, drainage, cisterns, grave vaults, &c. For all these purposes and many more the slate is prepared at the factory, according to measurements supplied by the contractor, and all that the latter has to do is to set the slate into place, after it has been set up and fitted at the factory before it is shipped.

Slate used for this purpose can be used either in its natural color, or it can be given any color or almost any figure desired. By the process of marbleizing slate all kinds of marble, granite, wood or tiling material can be imitated, if it is thought desirable, for the purpose of ornamentation, but the natural color of slate is of such a cleanly shade that in most cases it is used in its natural condition. These various properties are being better appreciated every day and slate will continue to find an increased market on account of them.

M. E. LYNCH has moved his plumbing business to a new store on Foster street, Peabody, Mass.

The P. and S. S. League.

Last Monday night the Ronalds & Johnson Company's Brooklyn team won two games in the Plumbing and Steam Supply League contests on the Monarch Alleys, New York City, and in one game tied the high team score of 827 made by Behrer & Co. R. W. Steves contributed a score of 195 to the total. The H. P. Read Lead Works team won and lost a game, C. V. Driggs making a score of 196. The team of Fred. Ade & Co. lost both their games. On Thursday night the team of John A. Murray lost two games, the C. S. Locke & Smith team split even, and the John Simmons Company's team won both their games. Their leader, Henry Maurer, Jr., marked a score of 186. The team score was 708, the highest for the evening. The first month of the tournament has closed, and the standing of the various teams is given below:

The Standing of the Teams for October.

Team.	Won.	Lost.	Team score.	Individual score.
Behrer & Co.....	4	0	827	198 M. Behrer.
John Simmons Company....	4	0	708	186 H. Maurer, Jr.
Thomas G. Knight.....	2	0	647	156 E. E. Benas.
Ronalds & Johnson Company,				
Brooklyn	3	1	827	195 R. V. Speves.
Crane Company.....	3	1	727	210 A. E. Good.
F. N. Du Bois & Co.....	2	2	728	163 E. E. Haff.
Central Foundry Company..	2	2	701	199 J. S. Dibley.
H. P. Read Lead Works....	2	2	689	196 C. V. Driggs.
C. S. Locke & Smith.....	2	2	657	155 C. A. Blanchard
Dimock & Fink Company....	1	3	684	167 A. B. Beith.
Ronalds & Johnson Company,				
New York.....	1	3	669	159 H. Boilman.
F. Ade & Co.....	1	3	575	166 F. R. Lowe.
Salesmen	0	2	702	194 R. C. Wilson.
E. F. Keating.....	0	2	525	149 F. J. McCarthy.
John A. Murray.....	0	4	576	141 G. W. Tilton.

Heating and Plumbing Notes.

FRED. GELINAS, secretary of the Department of Public Works at Ottawa, Canada, will receive bids until November 8 for a heating system for the post office at Digby, Nova Scotia.

JOHN GETZ & SONS, York, Pa., have been awarded the contract for equipping the factory of the Cosmo Carriage Company, at that place, with water closets and washstands on six floors of the building.

BOON & SAMPLE, Philadelphia, have the contract for plumbing the new station of the Pennsylvania Railroad at Thirty-second and Market streets, that city.

BRANDERLIES & SCHOLL will make a specialty of steam and hot water heating and hydraulic and automatic sprinkler work at their new plumbing establishment, 11 Columbia street, Utica, N. Y.

THE Mississippi State House Commission will hold their next meeting at Jackson, Miss., on Thursday, November 7, when they will award a contract for electric wiring, plumbing and steam heating the new Capitol Building.

CONTRACTS have been let for the erection of a brick warehouse and fire proof building for chemicals for the Ahrens & Ott Mfg. Company, Louisville, Ky.; also for a new enameling shop to replace the one recently burned.

THE KEYSTONE POTTERY, at Trenton, N. J., was visited by a fire on Sunday which did some thousands of dollars' worth of damage. The cause of the fire is unknown, but it is believed to have been of incendiary origin.

ROURKE BROS., New Haven, Conn., have taken the contract for the gas piping in the new Y. M. C. A. Building in that city. The contract will require about 20,000 feet of Pipe.

C. S. EAMES, Bridgeport, Conn., has taken the contract for plumbing and steam heating in the Congregational parsonage in Housatonic, Mass., and for remodeling the hot water heating in L. E. Fuller's residence in the same place.

THE BARLOW BROS. COMPANY, Waterbury, Conn., have the contract for the plumbing and heating of a new residence for S. L. Arthur. They are also heating the new office of the Farrell Foundry & Machine Company and

the residence of James Tobin, and are at work on a large contract at the new rolling mill of the Scovill Mfg. Company.

JENKINS BROTHERS, 71 John street, New York, advise us that they were awarded at the Pan-American Exposition at Buffalo a gold medal for their Valves, another gold medal for their 96 Packing and two silver medals for their rubber specialties.

THE DAVENPORT STEAM HEATING COMPANY of Davenport, Iowa, have a \$4000 contract for equipping the new Rock Island Depot with a plumbing system.

THE School Board of St. Louis, Mo., has decided to make an experiment in heating school buildings with Texas fuel oil, and to this end has made an appropriation for the equipment of the heating apparatus with suitable burners. Newell & Co., Beaumont, Texas, have offered to donate 20 cars of oil for the experiment, which will be made in the new Wyman School on Eads street.

L. E. LEWIS, manager of the King Earle Heater Company, 516 Harris avenue, Providence, R. I., is installing Furnaces in 19 houses in the city and suburbs.

THE BEST MFG. COMPANY of Pittsburgh, manufacturers of Valves, Castings and Piping, have just made shipment to Sydney, New South Wales, of some 260 tons of Pipe, Valves, Fittings, &c., to be installed in the central generating station of the Sydney City & Suburban Tramway system, which is to be equipped with \$800,000 worth of American machinery.

CHARLES D. HAUKE of Washington, D. C., has made application to the Board of City Commissioners of Youngstown, Ohio, for a franchise to erect a gas fuel plant in that city and pipe the streets for the purpose of supplying private customers with fuel gas. It is proposed to erect a very large plant in Youngstown to make fuel gas.

HENRY DUNKER, Davenport, Iowa, has the contract for plumbing the new school house and Sisters' Home that are being erected in St. Mary's parish.

JUSTICE WALTER LLOYD SMITH has granted an order for the dissolution of the Northcott Warming & Ventilating Company of Elmira, N. Y.

A COMMITTEE of the Master Plumbers' Association of Kansas City, Mo., composed of W. L. Hudson, Henry Goss, J. P. Cunningham, James Cotter, John McDonnell and J. L. Ryle, drafted resolutions on the death of Dent Yates, which were adopted and a copy forwarded to his bereaved family.

THE contract has been awarded for the erection of the foundations for the extensive new Bathtub and Sanitary Goods plant for the National Sanitary Company, at Monaca, Pa. The contract for the temporary water line for the new plant has been given to Elmer Sproull of Monaca.

CHARLES M. SHUSTER of Rochester, Pa., has been awarded the contract for plumbing the new High School building in that town.

THE Board of Health of Kalamazoo, Mich., has appointed on the Board of Examining Plumbers, in accordance with the State law, John A. Wheeler, master plumber, and Fred. Herman, journeyman plumber. The other members of the board are City Engineer Buckley, Water Commissioner Houston and Water Inspector Skinkel.

REINEKE, WILSON & Co., 13-19 Wood street, Pittsburgh, Pa., issue in the current number of *Trade Topics* a very attractive piece of printed matter calling attention to their Pumps, Water and Well Supplies, Gas Ranges, Acetylene Lamps, Chandeliers and a variety of Chain, Lift and Force Pumps.

WILLIAM O'BRIEN, Red Bank, N. J., is installing a steam heating plant in a large building for Patterson & Spinning.

THE Jersey City, Hoboken & Paterson Railway Company will receive bids at the office of T. Cressey, 800 Broad street, Newark, N. J., until November 15 for steam heating, water supply, plumbing and sewerage for a car barn and other buildings to be erected on their property on Market and Jersey streets, Paterson, N. J.

THE authorities of St. Paul, Minn., recently revoked the license of a plumber, owing to his persistency in doing work contrary to the plumbing regulations and because he used his license to report work done by other plumbers who had failed to secure a license.

New Firms and Changes.

It is reported that the plumbing firm of Miller & Johnston, Fall River, Mass., have dissolved partnership.

C. R. PRIME has opened a plumbing shop at Brandon, Vt.

THE LOETZER VALVE & MFG. COMPANY, Towanda, Pa., have acquired the plant of the Towanda Foundry Company, which they have refitted for the manufacture of their new line of Valves and Supplies, and for doing a general foundry and machine business. The necessary machinery will be installed in about ten days, and they expect to be in the market with their goods by the middle of November.

The Butler Leather Fillet.

The leather fillet manufactured by A. G. Butler of 103 Beekman street, New York, is constructed with geometrically perfect curved sides, which form a perfect arc of a circle when applied. The feather edges blend with the pattern so that there is no perceptible joint.



The Butler Leather Fillet.

The fillet can be applied to single or compound curves, or straight work, and no tacking or clamping is required.

Hydrogen in Acetylene Gas.

In a recent article on the analysis and purification of acetylene Rossel and Landriset quote figures which show that the proportion of hydrogen by volume in commercial acetylene usually ranges from 0.2 to 0.3 per cent., and does not exceed the latter limit even when the carbide is made in the presence of an excess of lime, says the *London Electrical Review*. Using an alternating current in the furnace, part of the lime excess volatilizes and part melts without decomposition, yielding a carbide of specially fine crystalline appearance; only the small residue is dissociated to metallic calcium, and, according to the present authors, only that part of the residue which happens to be in the middle of the finished lumps of carbide remains as metal and generates hydrogen when it comes in contact with water. Hydrogen in acetylene is objectionable, since, burning as it does with a non-luminous flame, it reduces the illuminating power of the crude gas. It is known that a considerable quantity of hydrogen may exist in acetylene when the gas has been generated in a faulty apparatus which encourages overheating, and the quantity may easily reach a figure that seriously affects the reading of the photometer. This hydrogen is due to various decompositions occurring in the process of evolution, and it can be totally avoided by proper construction of the generating plant. The hydrogen arising from the metallic calcium of the carbide is naturally unavoidable; but Rossel and Landriset clearly show that its amount is too small to be in the least degree sensible to the consumer. Indeed, it is difficult to understand how any appreciable amount of metallic calcium can appear in a material made in an alternating furnace, where true electrolysis is theoretically excluded.

SHEET METAL ROOFING.

One of the effects of the late steel strike that has been felt by manufacturers and dealers in sheet metal goods during the past season is a falling off in the sales of iron and steel roofing, metal shingles and tin roofing plates. The high price of sheet iron and terne plate and a scarcity of those materials due to the prolonged shut down of the mills conspired to limit the consumption and to stimulate the use of other roofing materials to a considerable extent. In respect of tin roofing, however, a gradual decrease in the use of terne plate for roofing purposes has been noted for some years past in various parts of the country, particularly in the East, where popular favor has been running more to metal and wood shingles, slate, tin and gravel, felt and other prepared roofings. This fact is conceded by tin plate jobbers throughout the Eastern section of the country, and it is also more or less noted in the Southern and Central States.

From many parts of the country come reports to the effect that slate roofing has made considerable progress in popular favor during the past season, and it is said that in a number of districts in the Eastern, Middle and Southern States slates have been placed on the roofs of new buildings in cases where formerly tin would have been used. Manufacturers and dealers in roofing slates refer to a decided increase in the demand for this material, and their reports are confirmed by the fact that the stocks of roofing slates have become depleted to an extent not known for years past, notwithstanding that the production has kept up to normal figures and in some cases has been increased over that of past years, while the export trade in slate has fallen off.

There is no doubt that the metal shingle has grown materially in popularity as a substitute for tin roofing during the past few years, while the various prepared roofings that are now offered in the market have secured considerable attention. In the Southern States, in particular, metal shingles have come into vogue in preference to tin plate. The reason advanced for this preference is that it has been found that tin roofing was expensive, owing to the climatic conditions which make it necessary to paint the tin roof every year. The use of metal shingles and sheet iron roofing in Southern cities is restricted to some extent at the present time, however, owing to their relatively high cost, due to excessive freight rates. This, however, is only a temporary condition, which, it is expected, will soon be relieved.

In districts where tin is still largely used for roofing purposes there has been a marked increase in the demand for the heavily coated old style plates in preference to the cheaper grades, which have not been found to stand the test of time and weather satisfactorily. The complaint is made in some quarters that much of the terne plate now produced deteriorates far more rapidly than that used in years gone by, the contention being advanced that the steel sheets of which most of the present day roofing plates are made corrode more readily than the iron sheets formerly used, and that the coating does not adhere as closely to the steel sheets as to the more fibrous iron sheets. A growing demand for tinned iron sheets is said to be a feature of the roofing trade at the present time, and some of the tin plate manufacturers are preparing to meet this call.

Changes Among Tin Plate Officials.

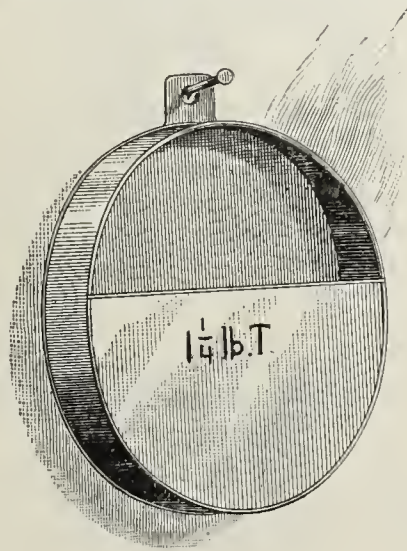
The American Tin Plate Company announce, in a circular letter to the trade, the resignation of Daniel G. Reid, president, and Warner Arms, second vice-president, of the company, as reported in our last issue; also the election to the presidency of W. T. Graham, formerly first vice-president; of W. M. Leeds, formerly third vice-president, as first vice-president, and of Frank Dickerson, general sales agent, as second vice-president. Mr. Dickerson, it is stated, will continue to retain charge of the sales department in addition to his new duties.

The resignation of Mr. Reid was made in order that he might devote the whole of his attention to the United States Steel Corporation, of which he is a member of the Executive Committee. Mr. Arms was the choice of

the directors for president in succession to Mr. Reid, but declined the office on the ground that he desired to relinquish active business cares after a continuous service of some 30 years in the iron and steel manufacturing industry. The loss of Mr. Arms' services cannot fail to be felt by the American Tin Plate Company on account of his intimate knowledge of and experience in the business. Mr. Arms was especially familiar with the labor conditions in the iron and steel trade. He was prominent during the recent labor troubles and those of former years, having acted as chairman of several committees appointed to carry on negotiations with the Amalgamated Association.

Tin Rivet Boxes.

One of the conveniences of every well equipped tin and sheet iron shop is a set of rivet boxes, a device of some antiquity. The early rivets were rough made and not as popular as the machine made rivets of to-day, and it is the general use of the modern true and smooth little rivets, black and tinned, that has made the rivet box not only a convenience, but a necessity. Yet there are shops where rivets are still kept in the original packages in which they are received. A hole is opened in one cor-



Tin Rivet Box.

ner, and when the rivets are desired for use some are sprinkled on the bench convenient to the workman, and, owing to the difficulty of putting the rivets that are not used back into the package, and the cheapness of them, many rivets are wasted by workmen, who, otherwise, are not inclined to be either slovenly or wasteful.

Where the shop has the wall space devoted to a set of rivet boxes properly marked, similar to that shown in the accompanying illustration, no time is wasted in hunting over a pile of boxes to get the size of rivet needed. It is only necessary to walk up to the wall and lift from its proper nail or hook the rivet box, take it to the work bench and lay it flat, when the rivets which it contains will spread themselves over the back, which now becomes the bottom. The opening is sufficiently large to allow the hand to pick up the rivets as needed. In this way the rivets are not likely to be swept off the bench in handling the work, but are always convenient to hand for use. The covered portion of the box need only be of sufficient size to hold a few more than one package. In many shops they are all of one size, large enough to hold, with ample space, a package of 3 or 4 pound rivets. In some shops the boxes are made in two sizes, the larger boxes having too much waste space for such small rivets as 1 pound.

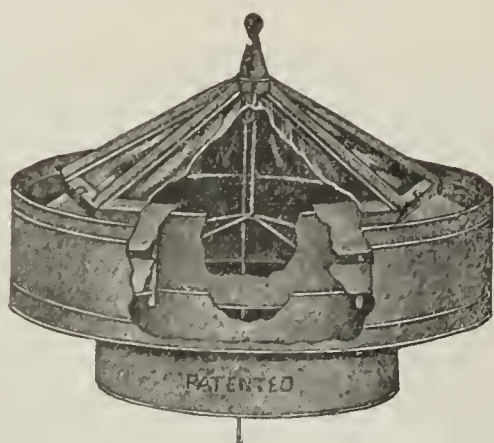
The rivet box shown is modeled after the style used in the shop of Burritt & Montgomery, Norwalk, Conn., and is made 5½ inches high, 4¼ inches wide and 1 inch deep. In many shops the boxes are made perfectly round. In other shops they are made square at the bottom. This variety of style affords an opportunity for the tinsmith to display his taste or preference. In former times the apprentice might add a box or two or make similar boxes of larger size for stove bolts to try his skill as a budding tinsmith.

The Rolling Mill Company of America.

George J. Humbert, formerly with the Humbert Works of the American Tin Plate Company, at Connellsville, Pa., has succeeded in interesting some New York capitalists in South Connellsville as a manufacturing site, and as a consequence the Rolling Mill Company of America have been chartered under the laws of the State of New Jersey for the purpose of erecting and operating steel and iron rolling mills there. The plant when completed will consist of 20 sheet mills, open hearth steel plant and modern sheet bar mill, with a view of being independent of the market in the matter of bars from which the sheets are rolled, and will employ upward of 1200 men. The plans are prepared and bids are being received this week for the buildings and machinery. The latter will be completed at once for ten mills, and ten more will be added later at the convenience of the company. The plant will cost about \$500,000 when completed. The main building will be 110 x 400 feet, with water house and storehouse 50 x 250 feet and boiler house 45 x 80 feet. The buildings will be of steel and brick, and the whole plant of modern construction. The power will be furnished by two engines of 36-inch cylinder and 60-inch stroke, with fly wheels 34 feet in diameter and weighing 75 tons. These engines will be capable of developing 1000 horse-power each. A 15-ton electric traveling crane of 50-foot span will traverse the entire length of the main building. Two large picklers of the most modern pattern will be used in treating the plates. The large engines mentioned will drive all the heavy machinery, but the small machinery will be driven by electricity. The plant will be located just north of the plant of the Steel & Iron Aluminum Coating Company. It will occupy about 10 acres and will be completed and in operation in from six to eight months.

The Superior Combination Skylight and Ventilator.

We illustrate herewith, by means of a broken view, the new Superior combination skylight and ventilator that is being manufactured and sold by Akers &



The Superior Combination Skylight and Ventilator.

Harpham, 628 East Mill street, Akron, Ohio. The salient feature of the device is that it serves both as a skylight and ventilator. It is equipped with a sleeved damper, that shuts off the ventilator in the winter time or at other times when so desired, and at the same time leaves the light shaft entirely clear, not interfering in any way with the entrance of light. It is made of heavy galvanized iron and the top is constructed like a regulation skylight. The bars are made with condensation drip gutters, the skylight being closed with ¼-inch ribbed skylight glass. The manufacturers are prepared to furnish these ventilators with sheet metal top where light is not required. They state that they have already placed them on a number of factories, hotels, apartment houses, public buildings and private residences. The device is made in sizes from 12 inches to 120 inches in diameter.

The Kiskiminetas Valley Mills.

The Kiskiminetas Valley Mills of the American Sheet Steel Company embrace the Vandergrift works, at Vandergrift, containing 21 mills, to which eight will be added; the Hyde Park works, with five mills; the Saltsburg works, with four mills; the Leechburg plant, with ten mills, and the Apollo works, with six mills, a total of 46 mills, which will soon be increased to 54. All these mills are in charge of S. A. Davis, division superintendent, who makes his headquarters at Vandergrift. Some remarkable records have been made in these various mills, both as regards tonnage produced and economy in operation. On Monday, October 21, the mills named above turned out 631 tons of marketable sheets. This is certainly a very creditable record and reflects much credit on the efficient management of Mr. Davis.

FLASHINGS.

TILLMAN FUNK, who commenced a Tin, Slate and Gravel Roofing, plumbing and heating business at Gainesville, Ga., a few years since, has enlarged his business until he now finds it necessary to erect a new building two stories in height, 25 feet front and 144 feet deep, to accommodate his growing trade. His shop will be equipped with machinery to do heavy Sheet Iron work and Cornice making. He has recently done the metal work and gravel roofing on two new \$1,000,000 cotton mills built by the Paolet Mfg. Company in his city, and now has the contract to put in cotton dust conducting pipes that will amount to 8000 feet in length. He is doing the metal work and roofing on the Presbyterian church at Carrollton, and the metal work, slate roofing and cornice work on the Methodist church at Darlington, S. C.

H. WEISS & Co., 20 Cliff street, New York, have been appointed Eastern agents for the O. K. Cornice Brakes, which they are carrying in stock and have on exhibition in their sample room. The Brakes are made of Bessemer steel and weigh much less than the cast iron Brakes. They are said to be much lower in cost and the claim is made that they do equally good work with the heavier goods. This Brake enables many shops to possess a machine of this character where the weight and price of goods in general use have interfered with the possession of this excellent feature of a sheet metal working shop equipment.

THE AMERICAN CAN COMPANY have awarded the contract for an addition to their R. Tynes-Smith Can Factory at Baltimore, Md. They will also install new machinery for increasing the capacity of the plant.

THE NEW ENGLAND STEEL ROOFING COMPANY, Worcester, Mass., announce their removal to fine new quarters in the Spy Building, at No. 274 Main street, that city, where they will have commodious offices. The company are very busy with a large number of important contracts, including new buildings in Rumford Falls and Waterville, Maine, and many in Worcester and vicinity.

A REPORT was current lately in the trade to the effect that the American Can Company proposed the erection of Tin Plate works of their own. This rumor, however, was not given credence in well informed circles, as the close alliance between the Can Company and the United States Corporation would seem to preclude any action that would be detrimental to such relations. It is far more likely that the Can Company will eventually be absorbed by the Steel Corporation, although it is denied that any action in that direction has yet been taken. The American Can Company are customers of the American Tin Plate Company, one of the constituent companies of the Steel Corporation, to the extent of about 50 per cent. of the entire product of Tin Plates. It would seem, therefore, that the interests of the two concerns are largely identical, especially as many of the stockholders and directors are interested in both of the corporations referred to. It is quite safe to assume that no steps looking to the erection of an independent Tin Plate works will be taken by the Can Company.

THE FRED. J. SWAINE COMPANY, of St. Louis, Mo., manufacturers of Dies and Sheet Metal Working Machinery, have a large number of orders in hand for all kinds of Dies and Presses, and their facilities are taxed to the utmost to keep abreast of their business.

CUMMINGS BROS., Holyoke, Mass., have slated the new St. James' Church at Brightwood and also a building for the Merrick Lumber Company of Holyoke. They are now at work relaying the roof on the foundry of the Holyoke Machine Company, and are roofing the addition to the plant of the Holyoke Steam Boiler Works. The firm have just completed contracts for the Dalton Power Company in Fitzdale, Vt., and the Lynch Bros. Brick Company in Holyoke, and have a number of other local roofing jobs in hand.

A SHIPMENT of their Rubber Roof Cement has been made to South America by George Callahan & Co., 218 Front street, New York. The firm report that their sales of this cement are increasing. One of the features is that it can be applied to a wet roof in a rain storm, at the very time that a leak is most difficult to repair and when it is most needed. An important advantage claimed for the Cement is that even when the package is left without its cover the Cement does not get hard, but will stay soft in the package for years. On the roof it remains elastic and is said not to crack or peel, while it sticks tightly to tin, slate, glass, wood or brick, and can be used in corners around chimneys, skylights, flashings, gutters, &c. Those who wish to test the Cement will receive a sample on application. In addition to this specialty the house also carry an Elastic Paint Oil prepared to meet the requirements of roofers; also Soldering Fluid for shop use. This Soldering Fluid is said to leave no stain and to have no disagreeable fumes in use.

THE MANKATO MFG. COMPANY, Mankato, Minn., are adding to their business the manufacture of Boilers, Smoke Stacks and all kinds of Sheet Iron Work, and have secured the services of Ed. Hill, lately connected with the Mankato Steam Boiler Works.

THE report that the American Tin Plate Company would very much enlarge their Johnstown Works, at Johnstown, Pa., is untrue. Nothing has been decided upon in reference to the Johnstown plant.

E. ERIKSON, consulting engineer, Pittsburgh, has a large amount of work on hand. He is building for the Ashland Sheet Mill Company, Ashland, Ky., a continuous billet heating furnace with gas producers and having a capacity of 130 tons of 4 x 8 inch billets every 24 hours. Billets will be heated in this furnace for the three-high Sheet Bar mill which the Ashland Sheet Steel Company are erecting in connection with a four-mill Sheet plant. Mr. Erikson is also building for the Tuscora Steel Company, at New Comerstown, Ohio, four-sheet and pair furnaces and four-annealing furnaces. The latter will be in two pairs, with a gas producer for each pair. The Tuscora Steel Company are erecting a four-mill Sheet plant.

THE LAUGHLIN NAIL COMPANY of Wheeling, W. Va., who have had a six-mill Sheet plant under erection at Martin's Ferry, Ohio, for some months, expect to start up two of the mills this month and two more in a short time. The fifth and sixth mills will not be ready for operation for several months. The Laughlin Nail Company will manufacture Corrugated Roofing and Siding and Stamped Ceiling, and will also make Black and Galvanized Sheets of the best grades.

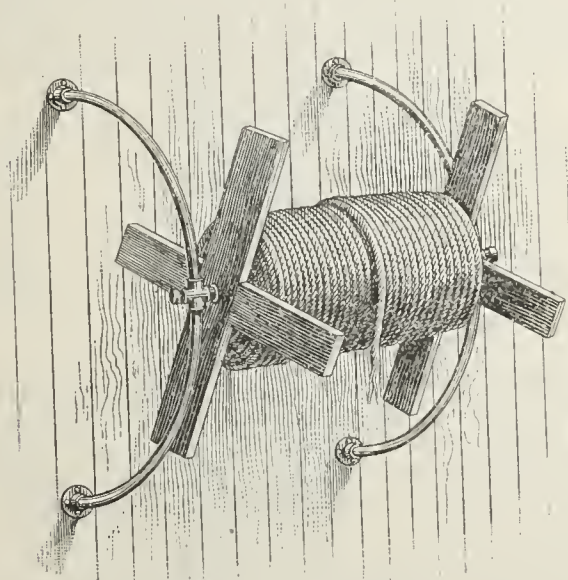
THE FERRICUP METAL COMPANY, Providence, R. I., manufacturers of Copper or Brass Coated Steel Sheets, Copper Wire, Bars and Sheets, &c., will build a new mill, the details of which are not yet complete.

GEROCK BROS. MFG. COMPANY, 1252 Manchester avenue, St. Louis, Mo., are calling especial attention to their original and attractive designs of Capitals made of Sheet Metal. The concern are also large makers of a varied line of Zinc and Copper Ornaments, also Skylights, Ventilators and Steel Ceilings. They issue a catalogue which they are pleased to send to all who apply.

A Clothes Line Holder.

A holder for a reel of clothes line, the handiwork of an apprentice, and in use in the store of Lane & Lane, Middletown, Conn., is illustrated herewith.

The holder is made of two brackets, each of which is composed of two pieces of $\frac{3}{4}$ -inch galvanized pipe bent, as shown in the illustration. These two pieces are joined together in a cross. To the other ends of these pieces of pipe are screwed flanges. The brackets are then securely screwed to the side wall at the proper distance apart. A reel of clothes line is placed between the brackets, and a gas pipe run through one cross, through the reel and through the other cross, making an axle on which the reel can revolve, having its bearings in the cross overs. Both ends of the gas pipe should be



A Clothes Line Holder.

threaded, and a cap or a lock nut screwed on so that the pipe will stay in place. This makes a very convenient method of holding a clothes line reel.

Lead Coating Cast Iron.

The process in common use for producing a coating of lead enamel on articles made in cast iron is to sift the powdered salt of lead, employed as a glaze, by hand onto the cast iron to which it is to be applied, which must have been previously heated to bright redness. This plan, which gives excellent results, is fraught with serious consequences to the health of the workmen, and in spite of the use by them of respirators and nose guards it speedily brings on ailments of a most distressing character, caused by the inhalation of the fine particles of lead floating in the atmosphere of the workshops. The consequent lead poisoning is not alone due to respiration, but the dust also enters the pores of the skin, and in a few years the bulk of the work people engaged in this industry succumb to the ravages of this terrible poison. An account is given by Georges Caye in *La Nature* of a process for applying a coating of lead enamel to iron surfaces by mechanical means, invented by A. Dormoy, the manager of the works at Sougland, in the Department of Aisne, France, in which danger of injury to the health of the work people is avoided. The articles to be coated, after being heated to redness, are placed in a double hermetically sealed chamber with glazed sides; each half of the chamber can be worked alternately, and the surplus enamel powder, dusted over the metal by means of a sieve, is removed from the chamber by the draft from a high chimney. The necessary movements of the iron can be effected from the outside of the chamber, and the vibration of the sieves for the purpose of distributing the lead powder is provided for by an electrical beater. The various methods of introducing and rotating the object to be enameled, operated from the exterior of the chamber, are fully described, and it is stated that the new process has proved extremely successful in working and entirely does away with all risk of ill effects to the work people engaged.

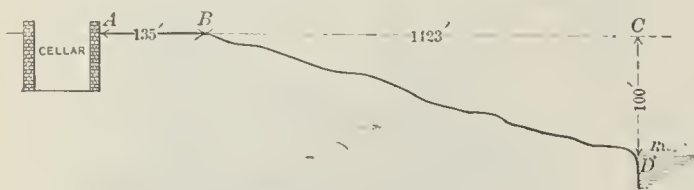
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WILL WIND MILL PUMP RAISE THE WATER?

From G. S. D., Summerside, P. E. I.—I would like to ask for information through the columns of *The Metal Worker* in reference to securing water under the conditions presented in the sketch herewith. We desire to use water in the cellar of a building which is 1658 feet distant from a river and 100 feet above it. It will be noticed that the ground is practically level for the first



Will Wind Mill Pump Raise the Water?

135 feet from A to B, and from B to D—1423 feet distant—the ground slopes down 100 feet. Can the water be raised by means of a wind mill placed at the house? If so, what sized pipe would be best to run from the river to the wind mill pump? The wind mill runs other machinery.

Answer.—You cannot pump water directly to the height named with the pump at the location of the wind mill. We suggest that the cheapest way is to transmit the power of the mill by means of a wire rope over large sheaves from the mill shaft to a pump shaft located near the river bank, so arranged that the pump barrel will be no more than 15 feet above the water in the river. Another system for pumping water from a distant location is by the use of compressed air, in which a small air compressor may be operated by the wind mill and the compressed air conveyed to an automatic water chamber in a well or the river by a pipe line, with a pressure sufficient to drive the water to a tank at the desired elevation and distance. The water pipe should be $1\frac{1}{4}$ inches. There are possibilities that a small wind mill over a well at the river bank will give more satisfactory results with less care and expense than any of the more complicated systems of pumping and conveying water.

DOES ASPHALT CEMENT CAUSE RUST?

From J. F. R., Big Rapids, Mich.—Can *The Metal Worker* or some of its readers tell me what it is in asphalt cement which causes tin and iron roofing to rust? There is one firm of roofers who come here every year or so and smear all the roofs within their reach with some of their cement. After they are gone a short time we have a great time looking for leaks. We would also like to know what is the best covering for tin and iron roofs.

Note.—We shall leave this question to our roofing readers and hope that they will give any experience they have bearing upon the subject. There are a number of good roofing paints which, if applied to the tin and iron roofs before they have time to start to rust, and then protected by other coats until the surface is entirely covered, are well calculated to make tin or iron roofing durable.

NAME AND ADDRESS WANTED.

Will the correspondent signing himself "Constant Reader," who sends an inquiry in regard to soldering aluminum, please furnish his name and address, in accordance with the conditions printed at the head of this department?

PIPING FOR HOT WATER HEATING.

From B. C. C., Illinois.—This being the time of the year in which a great many tradesmen are engaged in putting up hot water heating systems, it occurs to me that the discussion of the merits of the one and two pipe systems would not only be timely, but would greatly benefit the trade by spreading information in regard to work of this character. It would add interest to any information on this head that might be presented if the following points were covered:

Sizes of pipe to be used;

Methods for determining the size of pipe;

Arrangement of piping in running mains;

Arrangement of piping in taking off branches;

Arrangement of piping in connecting radiators;

Arrangement of piping in connecting expansion tank;

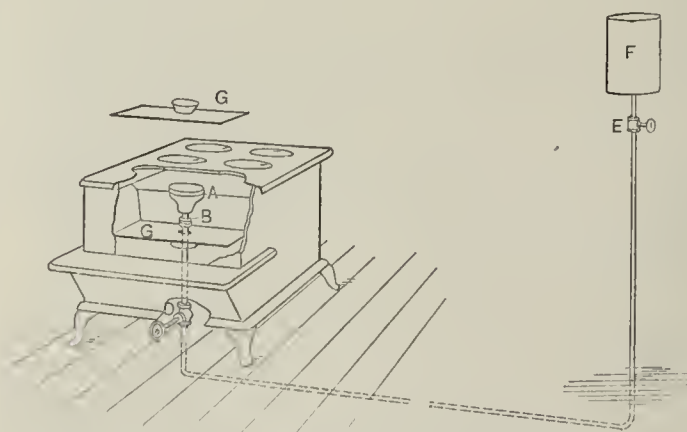
Methods for determining the size of radiators.

These are the important details and a comparison of the way such work is done could not fail to give new ideas and information that would be profitable to all who are actively interested in the question. I would therefore ask *The Metal Worker* to invite its readers to participate in such a discussion of their every day work and practice. It would surely enable some of them to avoid and correct errors that might interfere with the success of their work or involve them in losses.

Note.—The questions presented by this correspondent are of general interest, and many of our readers can give valuable information bearing on them. This department of *The Metal Worker* is provided for the exchange of information by our readers and we shall be glad to have each of these questions treated fully for the benefit of the trade. In the meantime we refer our correspondent to an article bearing on this subject presented on another page.

OIL FUEL BURNERS.

From Thomas F. Brady, Berkeley, Cal.—In reply to the inquiry of "J. P. B.," in *The Metal Worker* of October 12, I would state that there are fuel gas burners on the market for cook stoves. The accompanying illustration shows a burner in a cook stove adapted for burning oil, in which A is a cast iron pear shaped bowl, perforated at the top for the escape of the gas generated from the oil. B represents asbestos rope wrapped around a $\frac{3}{8}$ -inch pipe in the chamber just under this bowl and



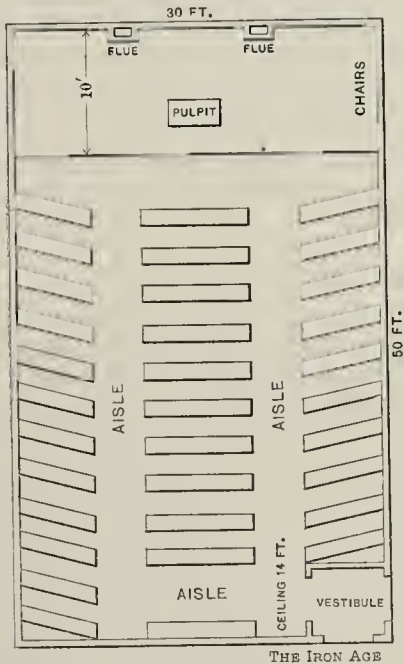
Oil Fuel Burners.

connected with it. Small holes are drilled in the $\frac{3}{8}$ -inch pipe, so that the oil can flow on the asbestos, the heat in the upper bowl being sufficient to vaporize the oil into a gas, which is burned at the orifices in the casting A. D is a $\frac{3}{8}$ -inch valve on the supply pipe at the stove, and E is another valve at the oil tank, which can be placed outside the house proper for safety; but it should be high enough to be above the stove, so that the oil will naturally flow from the tank to the generating chamber. G represents the plate to be set in the fire chamber in place of the coal grate and under the burner. The pipe can be brought from the oil tank under the floor and either up through the bottom of the stove or through the side of it, as may be most convenient or

desirable. The plate G is also shown upside down, with flange extending from it. This plate should be placed in the stove in such a position that in operation the burner will rest upon it and be at a hight to afford a good Bunson flame, but not so high that it will deposit soot on the underside of the top and the covers. All of the ordinary openings in the front of the stove should be cemented air tight, so that all the air which enters will come up through the opening in the plate G. This will produce a better flame than if the air is allowed to enter the fire box from all points freely. Care should be taken about this. It may be necessary to experiment in raising and lowering the burner until a good flame is secured and the right hight determined. The draft from the stove pipe will carry off the odor from the oil and the stove will do all the ordinary work of cooking. This burner is handled in this section with success, and "J. P. B." can secure full particulars if he cares to correspond with me.

CONSTRUCTING A CHURCH FURNACE.

From A. S., Fort Recovery, Ohio.—I ask the assistance of the readers of *The Metal Worker* on heating a church, for which I have constructed a home made furnace. I desire to know, if it will work, how I can get the best results. The room to be heated is 30 x 50 feet, with an arched ceiling averaging 14 feet in height. In one corner of the room a space about 4 feet square is used for a vestibule. I have a 50-inch heavy cast iron box stove with grate for burning wood, and I wish to set it in a brick chamber, leaving 9 inches of space all around it. The smoke pipe is 8 inches at the collar, but must be divided into two 6-inch pipes and be con-



Constructing a Church Furnace.

nected with two flues, as the flues are so small that larger than a 6-inch pipe cannot be connected with them, and one would not be sufficient to carry off the smoke. I desire to locate the furnace at the end near the flues, then run the hot air pipes to the registers, so located that they will give the best results. Could I place the furnace 12 or 15 feet out from the flue and put in one large register, or place two—one in each aisle? The basement is where the furnace is to be set, and as it must be used for a Sunday school room and must be heated from the furnace, it is desired to have the furnace occupy as little space as possible in the Sunday school room. I shall be pleased to have some assistance in locating the furnace and the registers and arranging for the cold air supply. The building has a stone basement with brick walls above.

SHOP RULES.

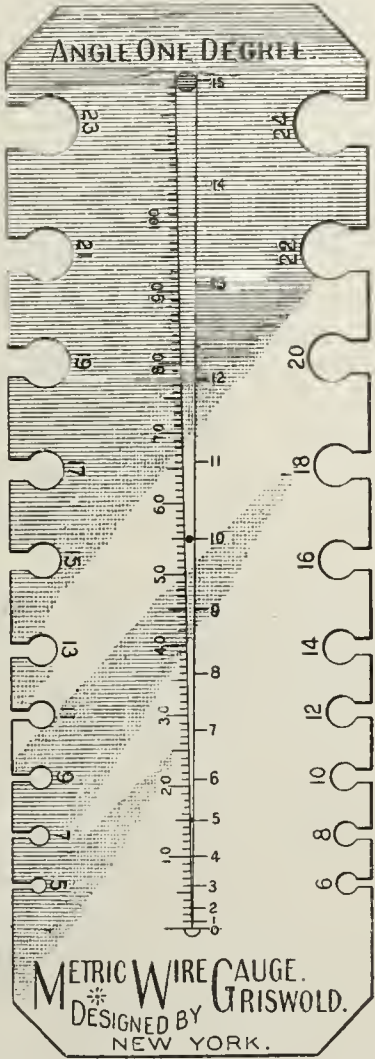
From A. G., Tacoma, Wash.—I should be glad if some of the readers of *The Metal Worker* would send in for publication the rules adopted by them for governing employees in a shop principally engaged in tinsmithing and plumbing work; also their methods for keeping an

account of the time and of the work done and material used daily by each workman.

Note.—In *The Metal Worker* of August 24 our correspondent will find the method of keeping account of the time and material used in the shop of one of our contributors. So far as shop rules for the government of employees are concerned, we shall be glad to present those that our friends have found useful.

The Griswold Proposed Metric Wire Gauge.

The accompanying sketch shows a wire gauge proposed by M. W. Griswold of New York. The center division represents 1-360th part of a circle, and has one of its sides divided to represent millimeters and the other marked with the gauge numbers. Commencing with the center of the circle as No. 0, each number increases re-



Sketch of the Griswold Metric Wire Gauge.

spectively 1 millimeter as roughly drawn. This division, beginning with No. 0, ends with No. 15. The marginal slots extend from No. 5 to 24. The former is intended to illustrate the principle upon which the gauge depends, and the latter the most practical form of manufacturing it.

Illinois Retail Hardware Dealers' Association Label.

The Illinois Retail Hardware Dealers' Association furnish to their members blue labels, of which the illustration herewith is a reproduction. The purpose of it is for attachment to every communication sent to a



manufacturer or jobber, so that the daily mail may show a material increase of labels from time to time, and that any person doing business with the retail Hardware trade may know that this association is here permanently and flourishing.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet, and without change in price.
Copper remains firm and dull.
Pig Lead is unchanged.
Spelter is scarce and firm.
Hallett's Antimony is a shade lower in price.
Nickel continues firm.
Aluminum is active and unchanged.
Tin Plates are without change.
Sheets are still in good demand, and prices high for spot.
Old Metals are unchanged in price, with irregular demand.
Sheet Copper is active and firm.
Sheet Zinc is in moderate demand at former prices.
Foundry Iron is active and prices strong, with higher tendency.
Hardware is in excellent demand, and prices are well maintained.
Plumbers' Supplies are very active, and prices strong in all lines.
Building and Roofing Papers have been advanced in price.
Manila Rope is up 1c. a lb.
Wire Nail prices show some irregularity; demand is good.
Cut Nails are in fair demand, and unchanged in price.
Wire remains active and firm.
Window Glass prices vary in different places, jobbers making their own quotations.
Linseed Oil is scarce, and unchanged in price.
Spirits Turpentine is quiet and firm.

METAL MARKET.

NEW YORK, November 1, 1901.

Pig Tin.—The conditions in the Pig Tin market remain practically unchanged from last week. Business is quiet, the demand for spot metal being particularly slack. Prices have not changed much during the past week; in short, the market has possessed but little interest. Straits Pig in small lots is quoted at 25½c. to 26c. per lb. A shipment of 25 tons of Tin from this market to Genoa was made during the week. This transaction was made possible by the fact that our market for spot Tin was slightly below London's spot figures and that freight rates from here to Europe are extremely low at this time. The market at the close was firm but very dull.

Copper.—Sensational rumors continue to circulate with reference to Copper, their rapidity being equaled only by the promptness of denials as to their truth. In the meantime consumers show an increased disposition to postpone all but absolutely necessary purchases, and the total of such purchases at this time is quite small. This is especially the case as regards Lake Copper. The rumors above referred to emanate from Wall street and are circulated to affect the fluctuations of Copper stocks. That a reduction in the price of Copper will be made is firmly believed by many in the trade, but it is not looked for just yet. In Lake Copper business is practically at a standstill. The production for the balance of this year is all contracted for, and such metal as is now changing hands is only for retail account. Prices are without change, Lake Ingot in small lots being quoted at 17¼c. to 17½c.

Sheet Copper.—Manufacturers of Sheet Copper report the continuance of a very active demand for this

material from all quarters. The consumption of Sheet Copper this season appears to be considerably ahead of that of former years. A great deal of the material is being used for cornice and architectural work, and also by stamping companies. Prices are very firm. Sheet Copper from store being quoted on the basis of 21c. per lb.

Pig Lead.—There is no change in the situation in this metal. Business is dull and prices are unchanged. American Pig in small lots is quoted at 4.62½c. to 4¾c. per lb. St. Louis advices indicate a favorable demand for Pig Lead in that market, with a marked steadiness in prices.

Spelter.—Spot Spelter here is scarce, and prices are quite firm, good Western brands in small lots being quoted at 4.55c. to 4.60c. per lb. The demand is of fair proportions, and the market as a whole has a strong appearance. The European Convention of Producers, which was expected to regulate production and prices abroad, failed to do so, as the Silesian producers refused to join in the movement.

Sheet Zinc.—No change has occurred in the market for this material. Jobbers are quoting 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7c.

Antimony.—Hallett's Antimony has declined a trifle, and it is now quoted in small lots at 8½c. to 9c. per lb. Cookson's is unchanged, being held at 10½c. to 11c. in small lots. The demand is of ordinary proportions.

Nickel.—No change has occurred in this metal. Small lots are quoted at 60c. to 65c. per lb.

Aluminum.—An active demand for Aluminum continues, and prices remain at 37c. per lb. for small lots of No. 1 Ingot guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—There is nothing new to report in connection with the Tin Plate market. The American Tin Plate Company are booking orders for the first quarter of 1902 at present prices, and it is understood that a good volume of business for future delivery is being placed. The demand for spot Plates is confined to small lots for present use. Jobbers in this section still complain of backwardness in receipts of supplies of Plates. Especially is this the case with Bright Charcoal and Terne Plates. The company are apparently putting almost all their force into the production of Coke Tins. However, there is no longer the extreme stringency that there was a few weeks ago, and jobbers' prices have lost a good deal of their stiffness. There is still a considerable irregularity in spot prices named by the jobbers, and quotations must, therefore, be taken as largely nominal. American Bessemer Coke Plates, 1C, 14 x 20, in moderate sized lots delivered at New York or corresponding points, now rule at about \$6.50 to \$6.75 per box. A further slight decline in the price of Welsh Plates has occurred during the week.

Sheets.—The demand for Sheets, while not quite so pressing as it was earlier in the season, still continues on a large scale, and the mills have all the business that they can take care of. Deliveries are still greatly delayed and jobbers in this vicinity complain of the difficulty of obtaining sufficient stocks to satisfy the current needs of their customers. The mills have a large number of back orders on their books, with which it will take them several months to catch up. The market meanwhile is settling down to a more normal condition, and there is no longer such a wide range of prices on Sheets as prevailed during the strike and immediately following it. The independent mills are adhering pretty closely to the quotations made by the leading interest. Jobbers' prices, however, are still materially higher than the official mill quotations. No. 27 One Pass Cold Rolled Soft Steel Sheets are quoted

at about 4.10c. to 4.15c., and Galvanized at 60 and 10 per cent. to 65 per cent. off the list.

Chicago advices are as follows: The Sheet supply improves slowly. Some jobbers are now receiving fairly good shipments from mill, but the rule is for stocks to continue broken. The demand is above the supply and values from store recede with great deliberation. No. 27 Common is quoted at 3.75c. to 3.85c. by the more fortunate possessors of stock. Galvanized is slightly lower, 65 and 10 being a common quotation. The scarcity in Tin Plates continues, Terne Plates becoming easier.

Old Metals.—The market for Old Metals is rather irregular. A good demand is noted for some kinds of Scrap Iron, while Scrap Copper and Brass are moving more freely in some quarters. There is no real snap to the market, however. Prices show no quotable change. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14½c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¼c.
Light Brass.....	per lb. 7½c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.
Tin Plate Scrap, per gross ton.....	\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.25 to 7.50
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—The market is steady, but without any special activity. The Pipe industry has taken additional quantities lately. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$15 to \$15.75; No. 2 Plain, \$14.25 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$15.50 to \$15.75; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$15.50 to \$15.75; No. 2 Soft, \$14.75 to \$15; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—The market for Pig Iron, while slightly less active than last week, remains more than fairly brisk. The business of the week has been well distributed. Some of the local furnaces are now sold so far ahead that they will soon be out of the market for delivery during the first part of 1902. Prices are steady, as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.25 to 16.00
Local Coke Foundry, No. 2.....	14.75 to 15.25
Local Coke Foundry, No. 3.....	14.25 to 14.75
Local Scotch, No. 1.....	15.25 to 16.00
Ohio Strong Softeners, No. 1.....	17.00 to 17.50
Southern Silvery, according to Silicon.....	15.65 to 16.00
Southern Coke, No. 1.....	15.15 to 15.40
Southern Coke, No. 2.....	14.40 to 14.65
Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—Business continues on a surprisingly large scale, considering that the closing month of the year is near at hand. The situation appears to be much stronger than the most pronounced optimists would have predicted three months ago. Sales during the past week have included almost every grade of Iron that is made. Small lots of the best qualities have sold at very full prices, while at the inside figures very little has been done, the great bulk having been at medium or a little better than medium prices, particularly when quick deliveries are specified. The general range of the market may be quoted about as follows, for Philadelphia and nearby points, and 25c. to 50c. less for deliveries within a radius of 100 miles south or west: No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.60 to \$14.75.

PITTSBURGH.—Pig Iron is the strongest department of the whole Iron trade, and it is estimated that the entire stocks of the country do not represent a ten days' supply. Bessemer Iron is very strong, and a good deal is changing hands. Foundry Iron is extremely active, and there have been heavy sales for deliveries running through the first part of next year. Buying is general, and small foundries that usually take only a few tons at a time are placing orders for 300 to 500 ton lots. It is

estimated that from 40,000 to 50,000 tons of Foundry Iron have been sold for delivery in this district in the next six to eight months. Prices have advanced sharply, and No. 2 Foundry is \$15 minimum, with sales reported as high as \$15.25 to \$15.50. No. 1 Foundry Iron is quoted at \$15.50 to \$16, Pittsburgh.

CINCINNATI.—There has been a continuation of the same conditions that have prevailed in the Iron market throughout the entire month. Trade has been good, and many furnaces are pretty well sold up for the first quarter of next year. Stock for prompt shipment is exceedingly scarce. There has been no change in prices, and little disposition is shown to advance from the present basis. Quotations in the main are steady on the same basis as a week ago. The outlook is for a good, steady market. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$15.10 to 15.60
Ohio Silvery, No. 2.....	14.60 to 15.10
Lake Superior Coke, No. 1.....	15.10 to 15.60
Lake Superior Coke, No. 2.....	14.60 to 15.35
Lake Superior Coke, No. 3.....	14.10 to 14.85

ST. LOUIS.—There is no noticeable change in the heavy and urgent requirements in the Pig Iron market, and several furnaces are reported to be sold right up for the first half of 1902 on certain grades. The transportation problem seems to be causing increasing uneasiness, and it is difficult to make shipments anywhere near on time. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 1 Foundry.....	14.00 to 14.25
Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

THE HARDWARE TRADE.

There is little reason for complaint in regard to the volume of business. The time of year has come when stocks are normally in good shape and attention is being given to the marketing of goods by merchants, both wholesale and retail. All the reports indicate that in both these branches of trade there is an excellent demand. It is the season when retail business is usually active and goods in considerable variety are being disposed of. In the line of builders' hardware there continues to be a demand which in several lines takes up the products of the factories as fast as the goods are turned out, and a good deal of inconvenience is occasioned by the delay in executing orders. Season goods also are moving steadily and in large quantities, with the result of making something of a scarcity in some kinds. Holiday trade is receiving attention, as enterprising merchants are getting ready for it and preparing to avail themselves of the opportunity which the season presents. Some lines which have been in short supply and on which the manufacturers have been far behind their orders are giving less cause for complaint and are being turned out by the mills more promptly. This is the case with barbed wire, wrought iron pipe, tin plate, sheets, and other heavy lines.

The tone of the market is on the whole excellent. Prices as a rule are steady and well maintained, but there are some soft spots. Wire nails, while regular quotations continue unchanged, are being cut to a certain extent, owing to the entrance into the market of outside competition. On the other hand, the general tone of the market is decidedly good. Some lines have been slightly advanced of late, and in many others in which no change has been made the cost of the raw material and advances in wages are adding to the cost of the goods. Conservative manufacturers are, however, reluctant to make advances and are satisfied at present to hold more firmly to their established prices, and are less anxious to contract for future deliveries.

S. E. JOHNSTON and James Maxwell have entered into partnership in the plumbing business on Stevens-street, Spokane, Wash.

NOTES ON PRICES.

Plumbers' Supplies.—Jobbing houses report an active demand for Plumbers' and Steam Fitters' Supplies, covering almost everything in this line. A large amount of new and repair work is in hand in and near New York City, which calls for a considerable volume of Plumbing Goods. The only complaint made by jobbers is of the continued scarcity of some kinds of supplies, especially Sanitary Enameled Ware and heating sizes of Wrought Iron Pipe. This scarcity, however, is not so pronounced as it was a few weeks back, as consumers' demands have been largely satisfied, and the goods are coming in with greater freedom. Prices are well maintained all along the line of Plumbers' and Steam Fitters' Supplies, with no indication of weakening in any direction.

Building and Roofing Papers.—Manufacturers of Building and Roofing Papers report some recent advances in price, despite the active competition, of which there are some indications in both Tarred and Rosin Sized Papers, as well as that of Asbestos material. Tarred Felt, single ply, is quoted at \$26 to \$28 per ton. Two-ply Felt is offered at 45 cents per roll, and three-ply at 65 cents per roll, of 108 square feet each, quite generally; while small lots to the average buyer are 50 and 75 cents, respectively. There is also a disposition to harden the price for Rosin Sized Sheathing, this market having been affected in a measure by the burning down last month of one of the four principal factories, followed by a conference of the remaining concerns at which it was decided to advance prices somewhat. The price to the average buyer now is about \$28 per ton. Manufacturers and dealers both refer to the difficulty of executing or getting orders filled, and further advances are predicted for next month. Deadening Felt is quoted variously at \$35 to \$37 per ton, this material regularly advancing in the fall and receding in the spring. Asbestos Building Felt and Mill Board 1-16 inch thick and less is being sold as low as 2½ cents per pound. Mill Board thicker than 1-16 inch and Sheets, 40 x 40 inches, 3½ cents per pound.

Cordage.—Owing to a sudden advance in the price of Manila Hemp, the price of Manila Rope was advanced 1 cent per pound by manufacturers on the 28th ult.

Wire Cloth.—The prices for Wire Cloth for the coming season have not yet been determined by the manufacturers, but it is anticipated that the question will be settled in the near future.

Enameled Ware.—Under date of November 1, 1901, the Lalance & Grosjean Mfg. Company, 19 and 21 Cliff street, New York, have issued a new and revised price-list of their Enameled Wares, superseding all former lists. The new prices are subject to discounts on the company's several lines of Enameled Ware, as follows:

	Discount.
Agate Nickel Steel Ware.....	50 and 20 %
Pearl Agate Ware.....	50 and 20 %
Blue and White Ware.....	60 and 15 %
All White Ware.....	50 and 20 %
Regal Steel Ware.....	60 and 10 %
Peerless Ware.....	70 and 10 %

Terms 60 days, or 2 per cent. for cash in 10 days.

The new prices and discounts adopted by the Lalance & Grosjean Mfg. Company are uniform with those of the National Enameling & Stamping Company.

Wire Nails.—Wire Nails are moving in satisfactory volume in the New York market. The retail merchants are ordering in small lots for the most part. As a result of the efforts made by new manufacturing concerns to secure business by offering Nails at lower prices than the regular quotations, local prices have been affected. Small lots of Wire Nails at store are now being sold at \$2.50 to \$2.55 per keg.

Cut Nails.—Manufacturers of Cut Nails, owing to their inability to obtain Steel, are still in arrears, some of the mills being from 15 to 30 days behind on orders. New York stocks of Steel Cut Nails continue to be somewhat broken in assortment, owing to the scarcity of some sizes. There is little difficulty in obtaining Iron

Cut Nails, but, while these are preferred in some sections, they are not always regarded with favor by the trade at large. Cut Nails from store are quoted at \$2.18 to \$2.30 per keg.

Wire.—The demand for Plain Wire keeps up and the output of the mills is shipped as fast as made. It is said that prices on Plain Wire are shaded only for desirable orders and for certain points of shipment in competitive territory. Plain Wire in small lots in New York is quoted at 2.60 cents, and Galvanized at 3 cents.

Window Glass.—At a recent meeting of the National Window Glass Jobbers' Association a resolution was passed permitting jobbers of the various large cities to establish such prices in their districts as they think will be for the best interest of the American trade. For the present, instead of a uniform price being adhered to in the different districts covered by the Jobbers' Association, the local jobbers in various cities will make their own prices. It is understood that a change in price, covering the whole list or a single bracket, may be made. The impression prevails that the market is not in as desirable a condition as reports would indicate. Manufacturers have more Glass on hand than they expected to have at this time, and the same is true of many jobbers. In fact, the demand has not been nearly as large as was anticipated. Glass is so high in price that stocks are being cut up to sizes by the trade, rather than order any more. No change has been made in local quotations, which are 80 and 20 per cent. discount on less than car lots from store.

White Lead.—White Lead in Oil still continues in good fall demand; in fact, the trade in this line has been very satisfactory since the cooler weather set in. Prices continue somewhat irregular, varying according to the manufacturer and the size of the order. There is a report in circulation that later a reduction in price is contemplated of ¼ cent per pound. The report, however, is without official confirmation. White Lead in Oil is quoted in a retail way at 7 to 7¼ cents per pound.

Linseed Oil.—The general condition of the Linseed Oil market is unchanged. Spot Oil continues scarce, and crushers are only shipping small lots on October contracts. There is not much prospect of the situation improving until the crushers can buy Seed more freely, and the demand falls off on the advent of cold weather. City Raw Oil is quoted in moderate sized lots at 66 to 67 cents per gallon. Bolled Oil is 2 cents advance on Raw.

Spirits Turpentine.—The Turpentine market has fluctuated but little, and quotations are now the same as a week ago. Local stocks are not large, and receipts at Southern points are not heavy. Business is comparatively light and confined to small lots. Retail quotations are 39 to 39½ cents per gallon.

Old Rubber.—The demand for Scrap Rubber is moderate. Prices are strong. Dealers in New York and Vicinity are paying about the following figures:

Car Springs, ton lots, per lb.....	5¼c.
Rubber Shoes, less than carloads, per lb.....	7¼c.
White Wringer Rolls, per lb.....	7¼c.
Inside Bicycle Tubing, per lb.....	21½c.
Outside Tubing, per lb.....	7¼c.

TRADE NOTES.

GEORGE C. FISKE, Hinsdale, N. H., is interested in the formation of a company who propose to manufacture a new metal, to be used in many instances as a substitute for Brass. It is proposed to erect a factory for the purpose.

THE ALABAMA MFG. COMPANY of Birmingham, Ala., of whom Samuel D. Jones is the head, have leased 80 convicts from the State of Alabama and propose to utilize them in their Iron Hollow Ware plant now being built at North Birmingham.

THE NEW YORK ALUMINUM COMPANY, 142-144 Worth street, New York, advise us that they have bought the stock, factory and wareroom of Raymond & Gottlob, formerly at 831 Broadway and 109 Fulton street. While the management of the Aluminum Company is entirely new, arrangements have been made to retain the serv-

ices of all the experienced employees of the old firm, so that with a greatly enlarged and improved plant and increased facilities the company are in a better position to supply the trade with all goods in the Aluminum line. Their specialty will be spinning, casting and stamping of Aluminum articles of all kinds.

Oil in Wyoming.

In a recent report on the oil lands of Wyoming Professor Knight, the State geologist, says: "Oil of superior quality has been known to exist in the fossil district for many years; there are seven distinct springs that flow oil, and a dozen years ago there were drilled in this field with a crude rig three wells, all yielding oil, and from which several hundred barrels of oil flowed; the deepest was but 200 feet. Owing to inexperience these wells were allowed to cave in at the bottom and ceased to flow. One, however, has continued to flow a small amount of oil to the present time. The evidences of an extensive oil field are on every hand. Gas is constantly escaping from the springs and from one old well. There are thousands of tons of oil shales in the field that contain enough oil to burn. It is a matter of history that Wyoming is rich in oil of a high grade. At Lander, in Fremont County, more than a dozen years ago, Dr. Graff of Omaha drilled three wells. They were all gushers. The remoteness from a railroad has made it impracticable to use this product. The wells still flow, and it is estimated that more than 60,000 barrels have flowed from them. In one reservoir there is at this time over 15,000 barrels, and the United States report on this field for 1898 and 1899 estimates that 4000 barrels go to waste annually in spite of attempts to shut it off. Nearly every one knows of the well recently drilled by the Union Pacific Railroad Company at Spring Valley. This well was drilled for water and struck oil of a very high grade. There is at this time over 700 feet of oil in this well, but the company will not permit it to be operated. Another well is now drilling within 2 miles of this Union Pacific well, and at 400 feet oil has been struck."

The system of giving premiums to workmen or apprentices for inventions or suggestions connected with their business has been followed by more than one large manufacturing concern in this country as well as in Great Britain, but probably few concerns have taken the course followed by David Thomson & Co., Limited, of Edinburgh, Scotland. This firm have adopted what they have found to be a thoroughly practical and successful method for stimulating apprentices to acquire a technical training and develop their intellectual faculties. The system takes the form of money awards, which are paid to apprentices who pass the examinations of the Science and Art Department in engineering subjects. Last year the firm paid out \$560 in such awards, and this year \$1265 has been paid, the practical outcome being a better quality of production at the works and a marked improvement in the skill of the worker.

The announcement that negotiations have been concluded for the shipment of \$000 tons of Texas petroleum to London is an event of considerable significance. If the experiment proves a success and it is found that the crude oil from Texas can be utilized in England for fuel purposes, this undertaking should mean a remarkable boom for the newly developed oil industry of the Lone Star State. There is a practically unlimited demand for cheap fuel in Great Britain, and also on the European Continent, owing to the high price of coal and its growing scarcity. For some time past European manufacturers have been looking to America for the solution of their problem of how to obtain cheap fuel. If Texas, with her enormous oil resources, succeeds in placing her product in Europe she will find a market that should prove a veritable gold mine.

The steamship "Siberia," of 18,600 tons, one of the largest ships ever built at an American yard, was

launched recently from the yard of the Newport News Shipbuilding & Dry Dock Company, Newport News, Va. The "Siberia," which has been constructed for the Pacific Mail Steamship Company, is 573 feet long and 63 feet beam, with 40 feet depth of hold. The "Korea," a sister vessel, of the same dimensions, was launched from the Newport News yard last March. The two vessels will run between San Francisco and Eastern Asiatic ports.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED NOVEMBER 1, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.	lb. 87¢
Small lots	lb. 85¢
100-lb lots	lb. 85¢
Aluminum Sheet, B. & S. gauge.	
In lots of 50 lbs or more.	
Wider than..... 6-in 14-in 24-in.	
And including..... 14-in 24-in 30-in.	
Nos. 13 to 19.....	\$0.42 \$0.44 \$0.47
20.....	.44 .46 .49
21 to 23.....	.46 .48 .51
24.....	.48 .50 .53
25.....	.47 .51 .54
26.....	.47 .54 .59
27.....	.48 .57 .62
28.....	.48 .57 .61
29.....	.49 .60 .69
30.....	.50 .64 .77

Note.—Lots of less than 50 lbs 5¢ lb extra.

Antimony—

Cookson.....	lb. 10½¢ 11¢
Ballott's.....	lb. 8½¢ 9¢
U.S.....	lb. 8½¢ 9¢

Brass, Roll and Sheet..15@20%

Conductors—

Corrugated.

Round or Square.—

Galvanized ½ or more N's't'd.....	70@5%
Not Nested.....	70@2½%
Plain Round, ½ or more.....	70@5%
Nested.....	70@5%
Galvanized, Plain Round, Not Nested.....	70@2½%

Spiral Riveted.

Galvanized.....	40%
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Lake Ingot.....	17½¢ 17½¢
Casting.....	16½¢ 17¢
Sheet and Bolt.....	21¢ lb basis
Cold Rolled Sheets.....	22¢ lb basis
Cold Rolled and Polished Sheets.....	23¢ basis
Planished Sheets.....	24¢ basis
Bottoms, Pits and Flats.....	25¢ basis

Eave Trough, Galvanized

Territory.....	L. C. L.
Eastern.....	75@10%
Central.....	75@7½%
Southern.....	70@12½%
S. Western.....	70@10%
Terms, 7% for cash.	

Eave Trough Mitres—

Lap or Slip Joint.....	11st, 25%
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Elbows—Plain Adjustable—

Eastern List.

Tin.....	30%
Galvanized.....	30%
Perfect Elbows.....	40%

Stove Pipe—

Four-Piece

No. 1.....	40.80 .85 .90 1.00 1.05 per doz.
No. 2.....	.65 .70 .75 .80 .85
No. 3.....	.60 .63 .65 .70 .80

Elbows and Shoes—

Galvanized.....	60%
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Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

	One Pass, C. R.	R. G.
	Soft Steel.	Cleaned.
Nos. 14 to 16.....	3.8	3.85
Nos. 18 to 21.....	3.90	3.95
Nos. 22 to 24.....	4.00	4.05
Nos. 25 and 26.....	4.10	4.15
No. 27.....	4.20	4.25
No. 28.....	4.30	4.35

Russia, Planished, &c.

Genuine Russia, accord-	
ing to assortment.....	lb 11@13¢
Do. Stained.....	6@10½¢
Patent Planished.....	lb A. 12¢; B. 11¢ net

Galvanized.

Nos. 10 to 16.....	lb. 12¢ 13¢
Nos. 17 to 21.....	lb. 13¢ 14¢
Nos. 22 to 24.....	lb. 14¢ 15¢
No. 25 to 26.....	lb. 15¢ 16¢
No. 27.....	lb. 16¢ 17¢
No. 28.....	lb. 17¢ 18¢
No. 29.....	lb. 18¢ 19¢
No. 30.....	lb. 19¢ 21¢
36 in. 1¢ lb higher.	

Lead—

American Pig.....	4.62¢ 4.75¢
Bar.....	5½¢ 5½¢
Pipe.....	2½¢ off
Tin Lined Pipe.....	12½¢ 20¢ off
Block Tin Pipe.....	37¢ 20¢ off
Sheet Lead, full rolls.....	7½¢ 20¢ off
Sheet Lead, cut.....	7½¢ 20¢ off
Old Lead in exchange.....	1¢ lb.

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb.....	60@65¢
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Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.....	@ 6½
Lots less than 500 lb.....	@ 7
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ ½
Lead, white, in oil, 12½ lb tin	
pails, add to keg price.....	@ 1
Lead, white, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	@ 1½
Lead, white, Dry in bbls.....	5½¢ @ 6
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over.....	@ 8
Lots less than 500 lb.....	@ 8½

Oils—

Linseed, City, raw.....	gal. 65@66
Linseed, City, boiled.....	07@68
Linseed State and West'n, raw.....	65@66

Spirits Turpentine—

In Southern bbls.....	38 @ 39½¢
In machine bbls.....	39 @ 39½¢

Putty—

In bulk.....	\$1.25
In bladders.....	2.15
In cans 12 lb to 25 lb.....	2.25
In cans 1 lb to 5 lb.....	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....	gal. 12½¢ 13½¢
Kerosene.....	gal. 13@13½¢

Pipe, Drain—

See Conductors.

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.....	60¢ 10¢ 60¢ 10¢ 5%
White Japanned.....	60¢ 10¢ 60¢ 10¢ 5%
Nickel Plated.....	60¢ 10¢ 60¢ 10¢ 5%
Bronze Finishes in Imitation of Gold,	
Sliver, Copper or Bronze.....	60¢ 10¢ 60¢ 10¢ 5%
Electronplated in Brass, Bronze or	
Copper.....	60¢ 10¢ 60¢ 10¢ 5%
White Porcelain.....	60¢
Solid Brass and Bronze Metal.....	50%

Roofing Material—

1 Ply Tarred Paper.....	ton. \$26.00 @ 28.00
2 Ply Tarred Paper.....	roll, 108 sq. ft. 45@50¢
3 Ply Tarred Paper.....	roll, 108 sq. ft. 65@75¢
Slater's Felt.....	roll 500 sq. ft. 50@60¢
Roofing Pitch.....	bbl. \$2.35

Rosin—

Common and Good—Strained.	
Rosin, C. & D.....	bbl. \$1.40 @ \$1.42
Rosin, E. & F.....	bbl. 1.55 @ 1.65
Rosin, G. & H.....	bbl. 1.70 @ 1.75
Rosin, I. & K.....	bbl. 1.80 @ 2.15
Rosin, M. & N.....	bbl. 2.60 @ 3.15

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, sq. sqr.....	\$3.25 @ \$1.50
No. 1 Bangor Ribbon, sq. sqr	3.00 @ 3.50
Pan Argyle, sq. sqr.....	3.00 @ 3.75
Peach Bottom, sq. sqr.....	4.85 @ 5.60
No. 1 Boys, sq. sqr.....	3.35 @ 3.55
No. 1 Chapman Keystone.	
sq. sqr.....	3.25 @ 4.25
Vermont:	
Sea Green, sq. sqr.....	\$2.00 @ \$3.15
Purple, sq. sqr.....	3.75 @ 4.25
Unfading Green, sq. sqr.....	3.25 @ 4.50
Red, sq. sqr.....	0.50 @ 11.00
Maine:	
Brownville, Unfading Black:	
No. 1 quality.....	\$5.25 @ 7.50
No. 2 quality.....	\$4.25 @ 6.00

Solder—

½ & ¾ guaranteed.....	17@17½¢
No. 1.....	14@15½¢
Prices of Solder indicated by private	
brands vary according to composition.	

Soldering Fluids—

	Per Pound.	Smaller Barrels Quantities
Concentrated Flux.....	4c	5c
Eureka Flux:		
Triple Strength.....	3c	3½c
Extra Concentrated.....	4½c	5c
Crystal.....	7c	
Gedney's Fluid.....	2c	
Lennox Fluid.....	2c	
Perfection Flux.....	3c	3½c 1c
Yager's Salts, 1 lb. bottles.....	each, 50¢	
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per lb.....	22@24¢
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Spelter—

Western Spelter.....	4½¢ 4.60¢
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Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanize 1.....	50%
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Tin Pigs and Bars—

Banca, pigs, lb.....	25½¢ 26¢
Straits, pigs, lb.....	25½¢ 26¢
Straits, in bars, lb.....	26½¢ 27¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is	
double the price of 14 x 20.	
Calland Grade:	
IC, 14 x 20.....	\$7.50
IX, 14 x 20.....	9.00
IXX, 14 x 20.....	10.25
IXXX, 14 x 20.....	11.50
IXXXX, 14 x 20.....	12.75

Melyn Grade:

IC, 14 x 20.....	7.00
IX, 14 x 20.....	8.50
IXX, 14 x 20.....	9.75
IXXX, 14 x 20.....	11.00
IXXXX, 14 x 20.....	12.25

Allaway Grade:

IC, 14 x 20.....	6.50
IX, 14 x 20.....	7.60
IXX, 14 x 20.....	8.70
IXXX, 14 x 20.....	9.80
IXXXX, 14 x 20.....	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	
IC, 14 x 20.....	\$6.50 @ 6.75
IX, 14 x 20.....	\$7.25 @ 7.50
N. B.—The reduction per box on lighter	
Plates than IC, 14 x 20, is as follows:	
100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC	
20 x 28, the rate for 14 x 20 being half as	
much. IX is usually held at \$2 per box	
advance for 8 to 10 lb coating and \$2.50	
to \$3 advance for 15 lb and upward.	

About 40 lb coating.....	\$17.50 @ 18.00
About 30 lb coating.....	16.75 @ 17.25
About 20 lb coating.....	14.75 @ 15.25
About 15 lb coating.....	12.75 @ 13.25
About 8 lb coating.....	11.50 @ 12.00

Boiler Plates, American—

IXX, 14 x 20..(112 sheets).....	\$16.00
IXX, 14 x 23..(112 sheets).....	17.00
IXX, 14 x 31..(112 sheets).....	18.50

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.....	\$15.00
Steel Lock Frame, per doz.....	18.00
Daisy Improved pattern, per doz.....	18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896. 30@35%	
Copper and Bronze, 3¢ per lb. 1st more	
than Brass.	
Seamless Brass Tubes, net list Feb. 6,	
1899.	

Tin.....	50%
Galvanized.....	50%
Fittings for do.....	40%

Zinc—

600 lb casks lb.....	69½¢
Per lb.....	7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.....	65@10@70%
35 and 40 gal.....	65@65@10%
Other sizes up to 52 gal.....	60@60@10%
52 gal. and above.....	80@80@5%
Extra Heavy Boilers:	
18 to 52 gal.....	50@10@60%
52 gal. and above.....	50@55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:	
Basin Cocks.....	65@65@5%
Bath Cocks and Double Bath Cocks.....	65@70%
Bbls.....	65@65@5%
Bbls, Flanged.....	65@70%
Fuller:	
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Colwell Lead Co., 63 Centre St., N. Y.

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Drouve, G. Co., Bridgeport, Conn.
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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.

Gunster & Forsyth, Scranton, Pa.

Snow Guards.

Clason Arch. Metal Works, Providence, R. I.

Solder.

Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gumme, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
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Ostrander, W. R. & Co., 204 Fulton St., N. Y.

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Vogel, Wm. & Bros., Brooklyn, N. Y.

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Curtis & Curtis Co., Bridgeport, Conn.

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Kielev & Mueller, 7-11 West 13th St., N. Y.

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Backman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.

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Gobellie Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
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Stove Pipe Thimbles.

Cheney, S. & Son, Manlius, N. Y.
City Forge & Iron Works, Dayton, O.

Stove Repairs.

Brauer, A. G., St. Louis, Mo.
Clark, Henry N. Co., Boston, Mass.
Deplinet Foundry Co., Erie, Pa.
Donaldson, O. G. & D. H., Buffalo, N. Y.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
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Magoon, A. J. & Son, Providence, R. I.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.
Union Stove Repair Co., Chicago, Ill.

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Sanuer Mfg. Co., Cleveland, O.
Greene, W. E., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

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Artistic Enameling Works, St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.

Bergstrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Boydton Furnace Co., 207 Water St., N. Y.

Brand Stove Co., Milwaukee, Wis.
Clad, V. & Sons, Philadelphia, Pa.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Eclipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
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Albee, Chas. A., Springfield, Mass.

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THE METAL WORKER.

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Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

At once, PLUMBER, capable of doing tin work. H. R. Talmadge, Sayre, Pa. Nov. 2

One first-class TINNER; must be man who can approach customers and lay out his own work; good wages to the right man. John W. Hartzel, Rochester, Pa. Nov. 2

Man experienced in figuring cornice work and slate and tile roofing; give reference and wages wanted. Box 158, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 2

Man as ASSISTANT TO FOREMAN in cornice shop in Chicago; must understand detailing and cutting; reference required. Address, stating weekly wages wanted, one year contract. Box 158, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 2

Fifteen skilled CORNICE and SKYLIGHT WORKERS immediately; none but mechanics wanted. The Clason Architectural Metal Works, Providence, R. I. Nov. 2

SALESMAN of unexceptional ability to take charge of Boston office and cover adjacent New England territory, representing a line of cast iron, steam and water house heating boilers of highest reputation and having an established trade. Address, with references, "M. B. H.," care *The Metal Worker*, New York. Nov. 2

Several first-class SHEET IRON WORKERS; steady work for the right men; state wages expected, age, if married, and how soon you could come to work. Address your reply to Box 428, Hartford, Conn. Nov. 2

Man as ASSISTANT PATTERN CUTTER on sheet iron work; steady job for the right man and good chance for advancement. Address, stating age, experience, if married, and wages expected, to Box 428, Hartford, Conn. Nov. 2

At once, a first-class PLUMBER; one familiar with country work preferred; must be sober; \$3 per day and steady work to the right man. Apply to "M. H.," White Plains, N. Y. Nov. 2

A SALESMAN acquainted with oil and gasoline stove trade in New England; state acquaintance and give references; for 1902. "New England," care *The Metal Worker*, New York. Nov. 2

A SALESMAN acquainted with oil and gasoline stove trade in New York State; acquaintance and give references; for 1902. "New York State," care *The Metal Worker*, New York. Nov. 2

At once, a practical PLUMBER and GENERAL WORKMAN for a country shop in a nonunion town; must be temperate and have some knowledge of the work; wages \$2.50 per day. F. W. Brown, Suffield, Conn. Nov. 2

One good TINNER who understands furnace work; state wages. E. Power, Frankfort, Ky. Nov. 2

TINNER experienced in blow piping; steady work for reliable man. O. Porbeck, 2208 North Broadway, St. Louis, Mo. Nov. 2

At once, good TINNER; one who understands pumps and general work in country shop; steady work at good wages to right man; give reference. Skinner & Richards, Collingwood, Ohio. Nov. 2

TINSMITH and SHEET IRON WORKER at once; steady job to a competent and reliable man; nine hours; state age, wages and reference. G. C. Winter, 136 Main street, Southbridge, Mass. Nov. 2

At once, a first-class TINSMITH and JOBBER; a steady position the year round to the right man. M. J. Shaut, Hornellsville, N. Y. Nov. 2

First-class PLUMBER and GAS FITTER; must be sober and reliable. Conover E. White, Atlantic Highlands, N. J. Nov. 2

TINSMITH for furnace work; must be a union man and a hustler. A. L. Yates, 521 Main street, Niagara Falls, N. Y. Nov. 2

At once, a good TINNER and FURNACE-MAN; must be sober and reliable. Conover E. White, Atlantic Highlands, N. J. Nov. 2

Competent FOREMAN in a cornice and skylight shop; one that can handle men and lay out work to advantage; none but competent men need apply. "Warren," care *The Metal Worker*, New York. Nov. 2

At once, a TINNER and PLUMBER; must be strictly sober, reliable, a hustler; give references and state wages wanted. Helena Tin & Plumbing Company, Helena, Ark. Nov. 2

CORNICE and SKYLIGHT MAKERS; come ready to work. Elizabeth Cornice Works, Julian place and Union street, Elizabeth, N. J. Nov. 2

First class NICKEL PLATER; one capable of managing plant in all details. "Manufacturer," care *The Metal Worker*, New York. Nov. 2

A good first-class TINNER; one who thoroughly understands his business inside and outside; \$2.75 per day and nine hours; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Oct. 26

A New York stove house wants a high grade SALESMAN for New York City and vicinity for 1902; must have acquaintance and highest credentials; a liberal salary will be paid to the right man. "High Grade," care *The Metal Worker*, New York. Oct. 26

One good SLATER and SHEET METAL WORKER; good job for right man. The Peet & Schuster Company, Springfield, Ohio. Oct. 26

Several good TINSMITHS, CORNICE WORKERS and SLATE ROOFERS; good wages for nine hours' work. H. E. Wieber, Rondout, N. Y. Oct. 26

A first-class TINNER; one capable to make pipes for blowers, &c. S. W. Damon, 367 Main street, New Britain, Conn. Oct. 26

A traveling SALESMAN of experience and acquaintance for New York, Pennsylvania and New Jersey to sell hotel French ranges and cooking apparatus to hotels and public institutions; give full particulars, reference and wages wanted; correspondence strictly confidential. "French Range," care *The Metal Worker*, New York. Oct. 26

A steady position at good fair wages to a TIN and SHEET IRON WORKER; none but a thorough workman on general jobbing need answer; A1 job for a reliable man. "Reliable," care *The Metal Worker*, New York. Oct. 26

SHEET IRON WORKER; one who can work from plans and do jobbing work; must be familiar with the stove and leader pipe, making systems; a good opening and steady position to right party; state requirements. "Brooklyn," care *The Metal Worker*, New York. Oct. 26

Competent TINNER, sober and active, understanding the making of elbow, casings and the setting of furnaces; best wages. "Engine," Box A, Ashtabula, Ohio. Oct. 26

Three or four good general SHEET METAL WORKERS; good wages and steady work all year round; men that can slate preferred, and one that can get out cornice from full size detail. Box 1, Station A, Chattanooga, Tenn. Oct. 26

At once, four CORNICE and SKYLIGHT MAKERS for in and outside work. Robert C. Reetz, 17 Dexter street, Pawtucket, R. I. Oct. 26

At once, a good sober, strictly first-class TINNER; one capable of doing inside and outside tin and galvanized iron work; must be experienced in cornice work; not over 40 years old; a steady job to the right man at \$3 per day and nine hours' work. P. P. Nickey, Santa Ana, Cal. Oct. 26

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Wanted to correspond with a man who understands the hardware business, and has some money to invest in a stock company; this is a good opening for the right man; references given and required. "R.," care *The Metal Worker*, New York. Oct. 26

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Wanted to employ steadily a sober PLUMBER that has some knowledge also of tin work; correspondence solicited. J. H. Jones, 414 East Main street, Streator, Ill. Oct. 26

SITUATIONS WANTED.

STEAM and HOT WATER FITTER with knowledge of plumbing; can take full charge; strictly temperate. Wm. A. Bennett, 236 West Fourteenth street, New York. Nov. 2

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TRAVELING SALESMAN; metals; five years on road; young, not married; territory traveled, Virginia, West Virginia, North and South Carolina; reference. J. V. French, Sunny Side, Cumberland County, Va. Nov. 2

By man who understands tinning and sheet iron work, steam and hot water fitting, also a good knowledge of plumbing and gas piping. "H. E. S.," 150 Washington street, Providence, R. I. Nov. 2

By ENAMELER with 15 years' experience as foreman for concern making enameled ware and signs. "E. W. S.," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Nov. 2

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Wanted, by a practical, experienced DESIGNER and CARVER of stove patterns, well posted in the latest styles, a permanent position. "Stove Carver," care *The Metal Worker*, New York. Nov. 2

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BOOKKEEPER; aged 30; single; thoroughly experienced in manufacturing line; up to date methods; all around man; capable of taking charge of office; exceptional references; salary required, \$20 per week. "Bookkeeper," care *The Metal Worker*, New York. Oct. 26

By a young man with two and one-half years' experience at plumbing and gas fitting, would like a steady position; city or country; best of reference; state wages. "W. L. R.," 8 Maple street, Natick, Mass. Oct. 26

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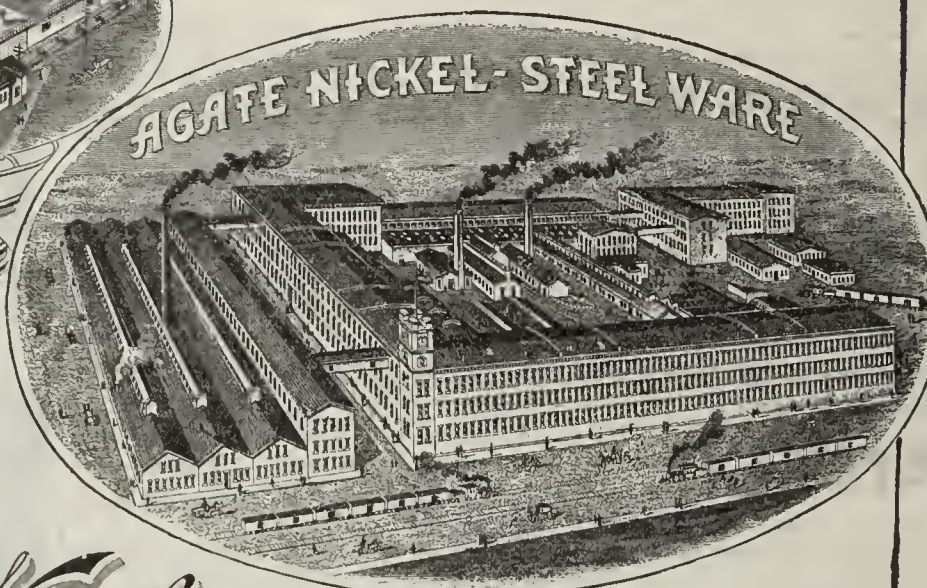
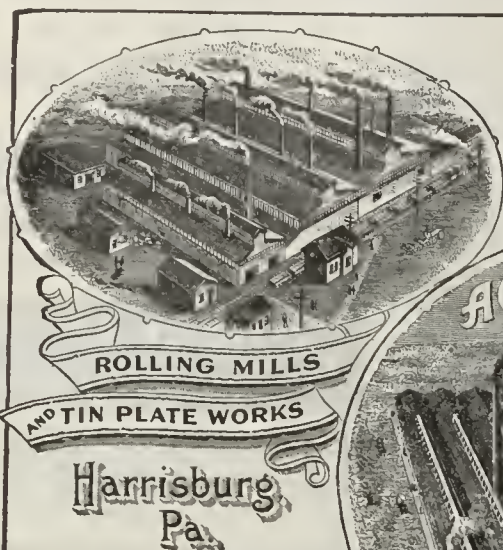
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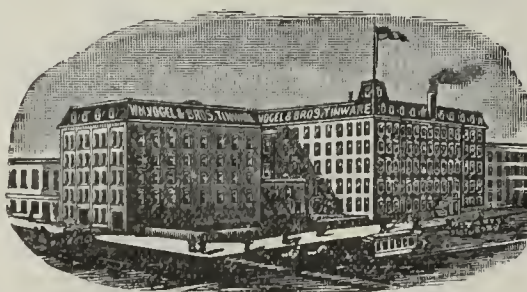
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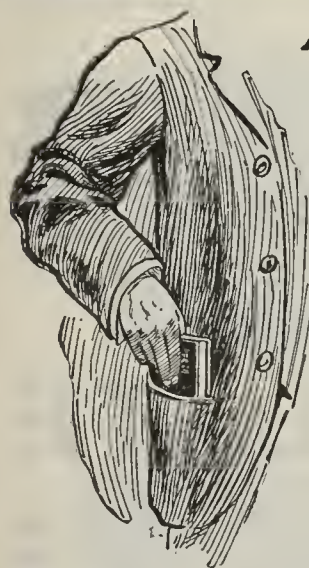
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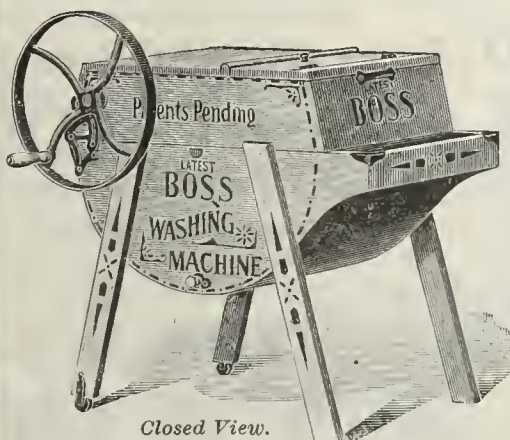
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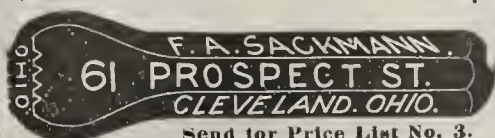
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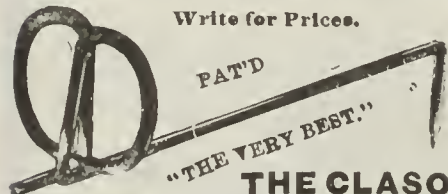
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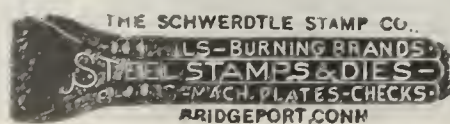
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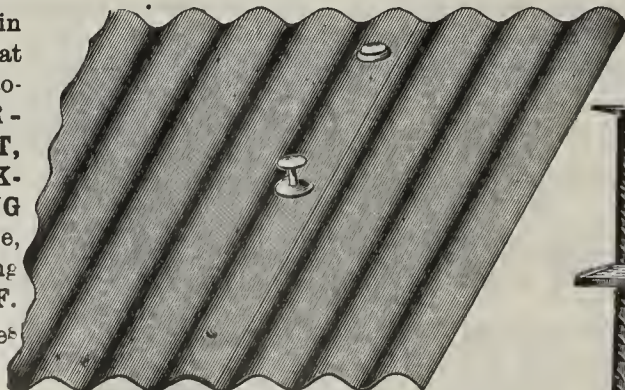
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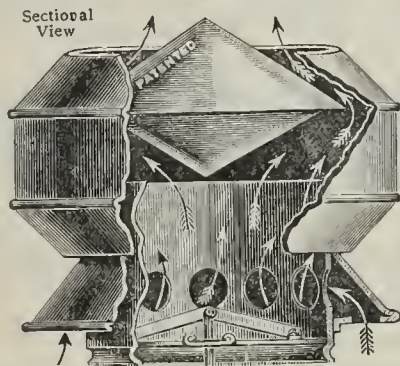


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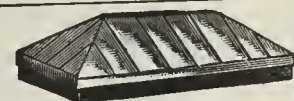
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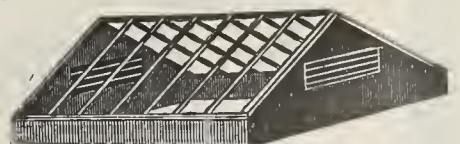


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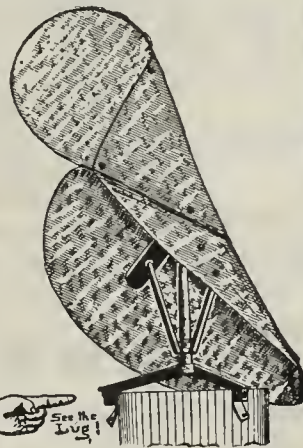
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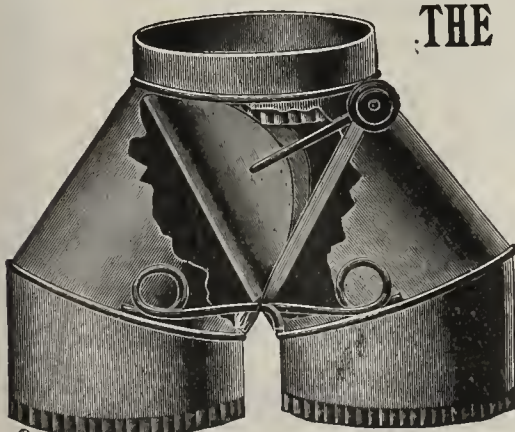
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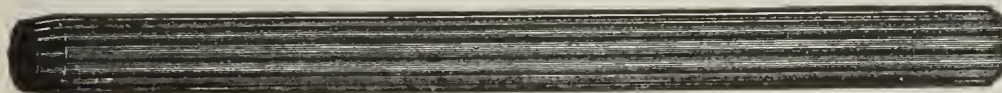
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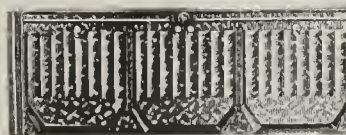
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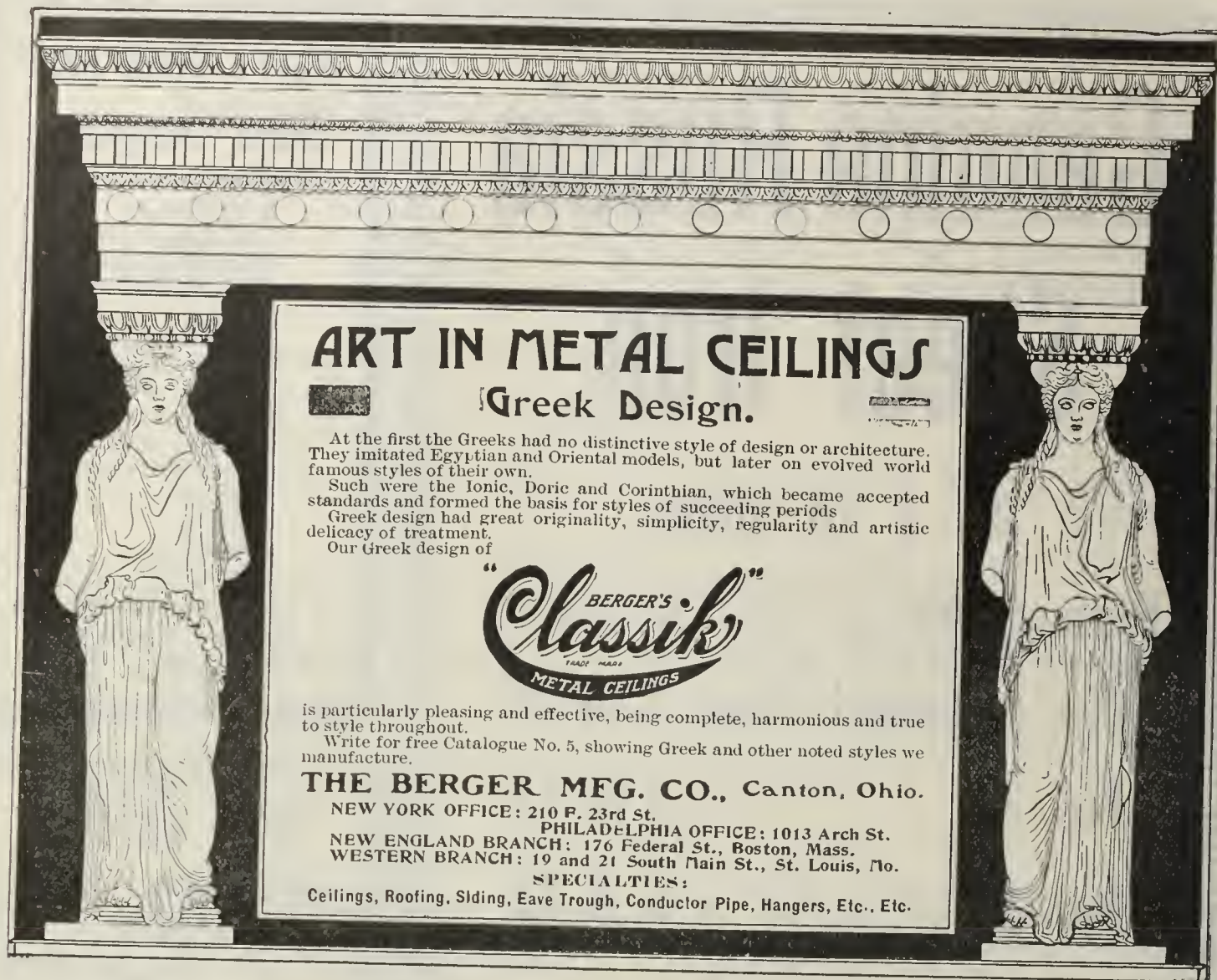
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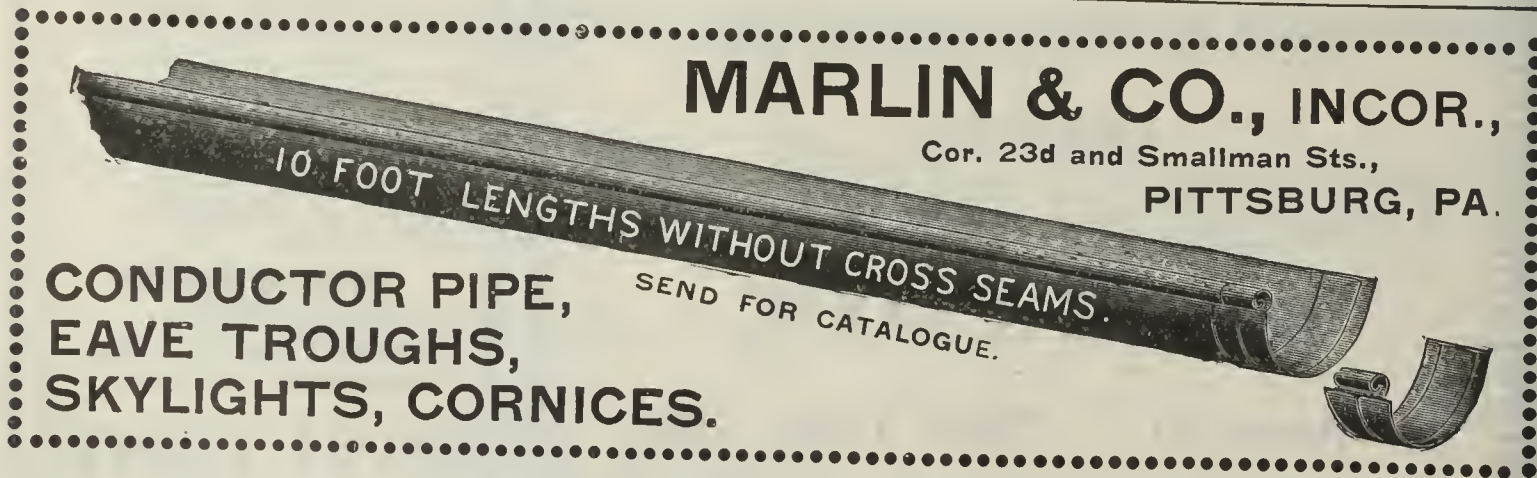
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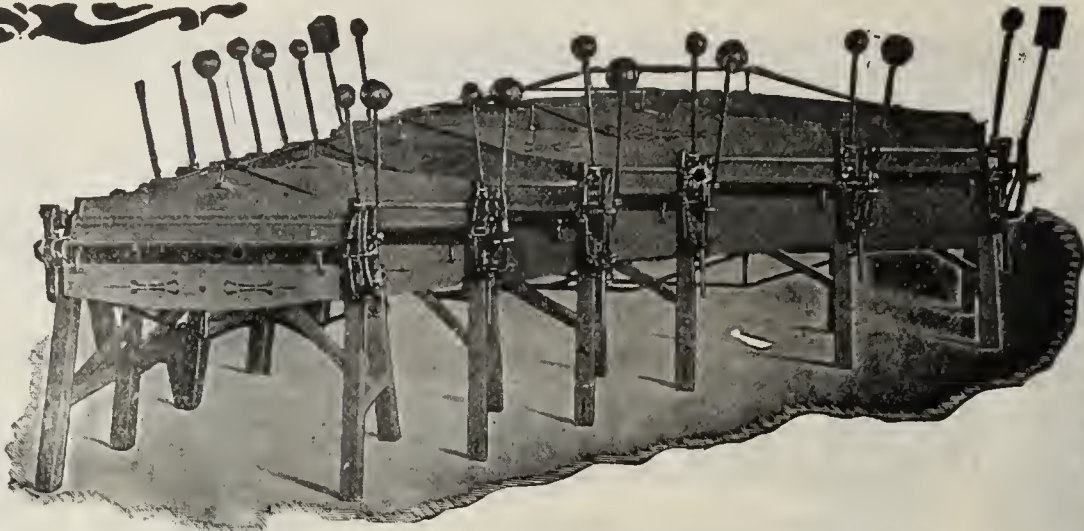
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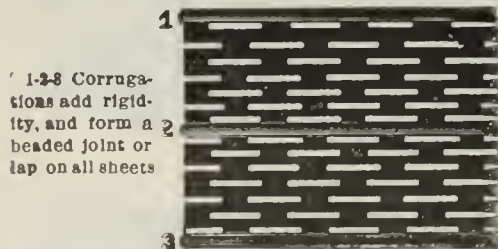
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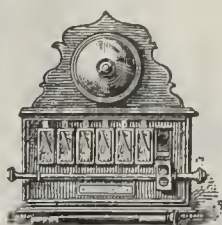
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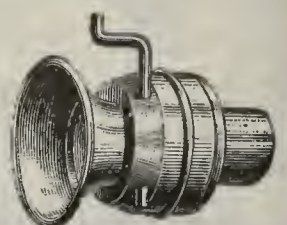


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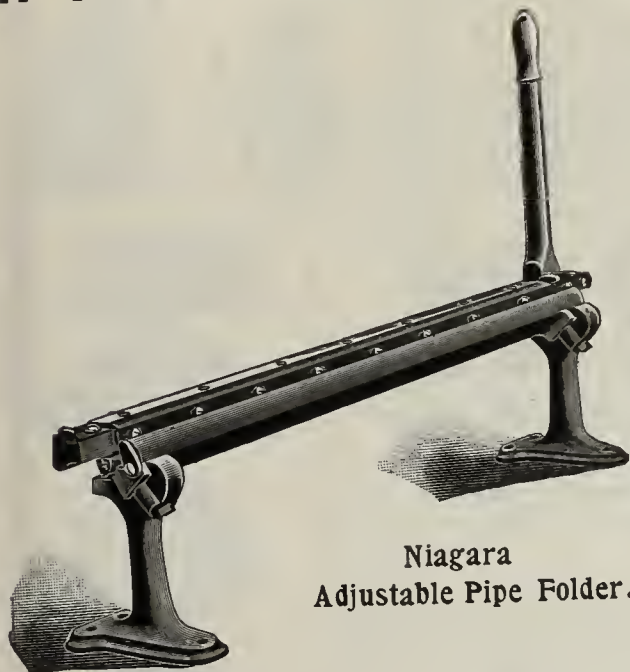
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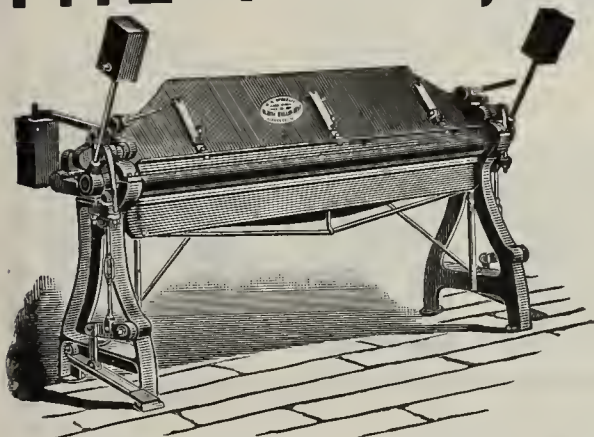


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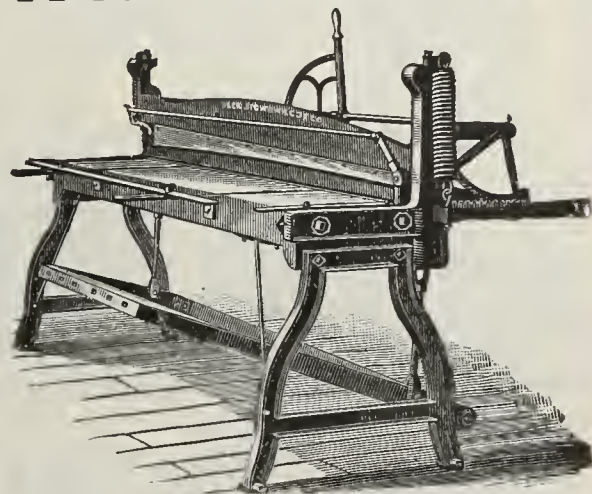
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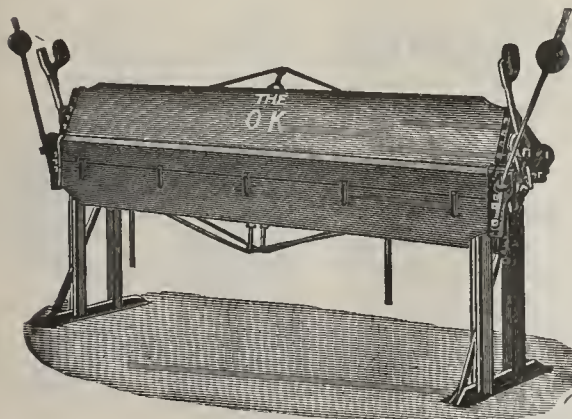
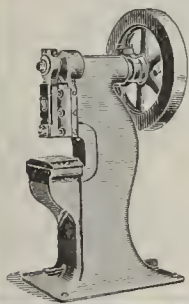
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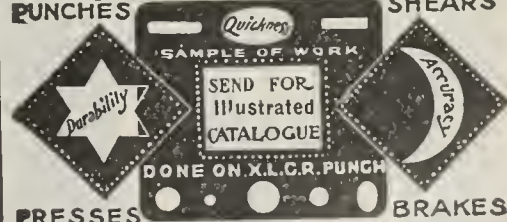
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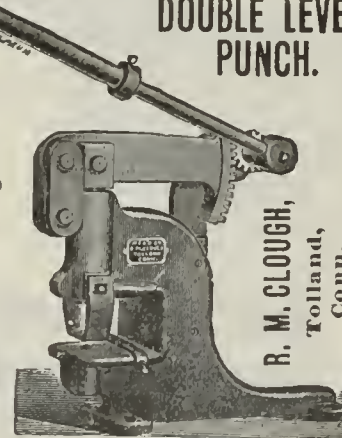




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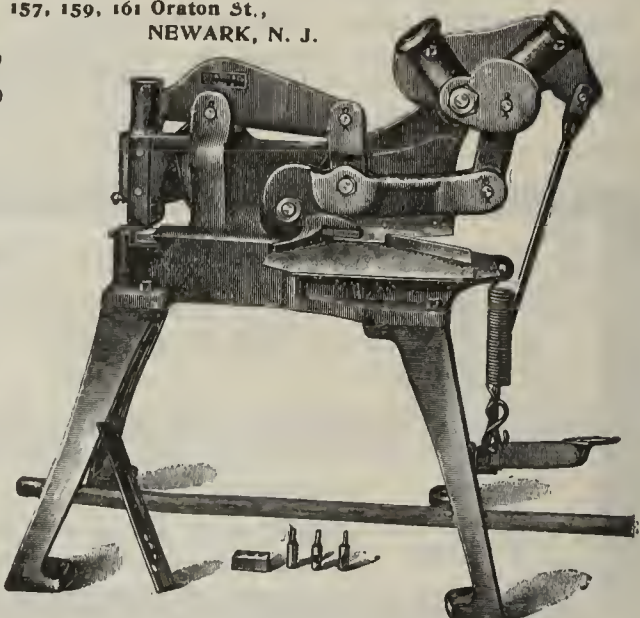
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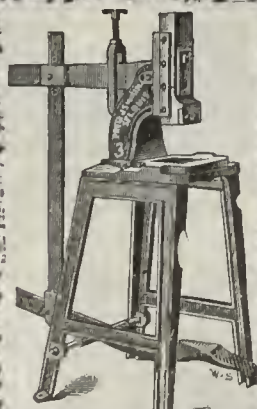
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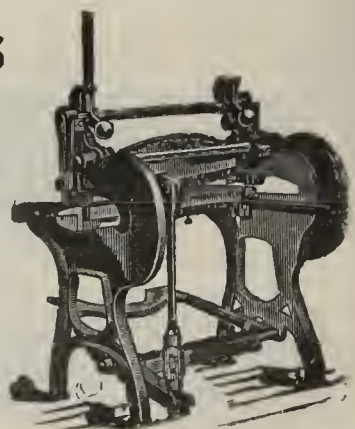
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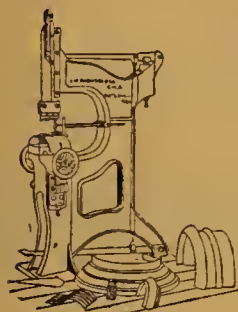
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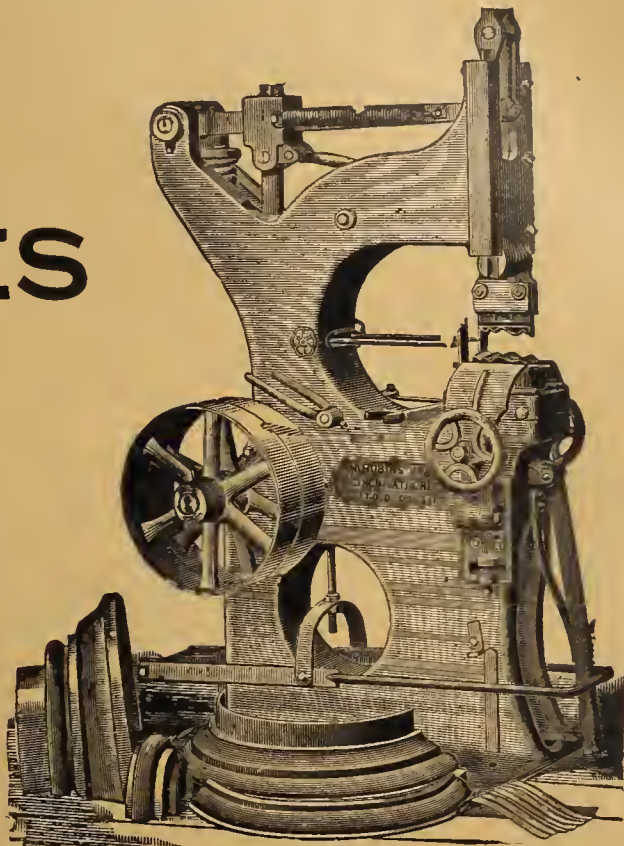


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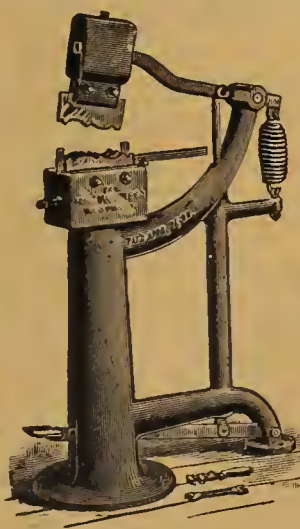
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NO CHANGING OF FOOD NECESSARY.

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A Popular Heater.

The Glenwood Hot Water Heater is unanimously approved and praised by dealers in heating goods because of new and practical improvements, especially the one piece construction which is acknowledged a great talking point over other boilers which are made in sections and sooner or later burn out and leak at the joints. Write for catalogue.

GLENWOOD.

Weir Stove Company, Taunton, Mass.

HEATER PIPE TIN.

We can make prompt shipment of the following sizes :

I C.	I X.
20 x 23	20 x 23
20 x 26	20 x 26
20 x 29 1/2	20 x 29 1/2
20 x 32 1/2	20 x 32 1/2
20 x 36	20 x 36
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We solicit your orders

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Manufacturers of Tin Plate,

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A WEEKLY JOURNAL OF THE
ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

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VOL. LVI.
 NUMBER 19.

NEW YORK AND CHICAGO, NOVEMBER 9, 1901.

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Is a High-Class Technical Book

Containing much information that even the practiced furnace man will find of value. It gives the only systematic and reliable treatment of warm air heating published, covering all matters pertaining to the construction, location and setting of furnaces, and to effective and economical heating by the hot air system.

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DAVID WILLIAMS CO., 232-238 William St., New York.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

CORTON & LIDGERWOOD CO.,

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Old Colony Bldg., CHICAGO.
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STOVE LININGS

MCLEOD & HENRY CO.,

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Gray Iron Castings. S. CHENEY & SON,
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Paragon Point No. 6.—PERFECT ADAPTABILITY.

While hard coal is mostly used in the Paragon Furnace, we make it to burn soft coal as well, and pea coal or coke can be burned in any size and any style. The Paragon line is also adapted to low cellars, and we have a form of it for bricksetting. We also make a combination Paragon with either steel or cast iron radiators.

This point means that whatever your requirements may be in the furnace line, you need not go outside of the Paragon Furnace catalog to meet them.

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 GALVANIZED IRON

Won't dealers in galvanized iron please keep on saying their brands are as good as Apollo! We ask no better advertisement.

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 New York

A STOVE is a bulky piece of Goods and therefore must move quickly to return a good profit. One sample

P. P. STEWART OAK WOULD BRING YOU LOIS OF ORDERS.

Don't let it go off your floor—so order two.

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This Ad. changes every issue.

"KITCHEN
 BOILER
 CONNECTIONS"

—EXPLAINS THE—

PRINCIPLE
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Piping Boilers

FIFTH EDITION

Price, \$1.00

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GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark

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FOLLANSBEE BROTHERS CO.,
 328-330-332 Second Ave.,
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 Galvanized and Black Sheets.

Scott's Extra Coated, our best manufacture, and imported Pure Iron Old Style are the leading Roofing Tins.

Philadelphia Branch,
 133 Arch Street,
 S. V. Reeves, Manager.

READ OUR "AD"
Page 15.
MAGEE FURNACE CO.,
 Boston.

Steam Specialties.

RELIEF and NOISELESS BACK
 ELEVATOR VALVES, PRESSURE VALVES,
 STEAM TRAPS, PUMP GOVERNORS,
 STEAM AND WATER, STEAM AND OIL SEP.
 REDUCING VALVES, AIR RS.
 TANK TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS

KIELEY AND MUELLER,

9-17 W. 13th St., NEW YORK.

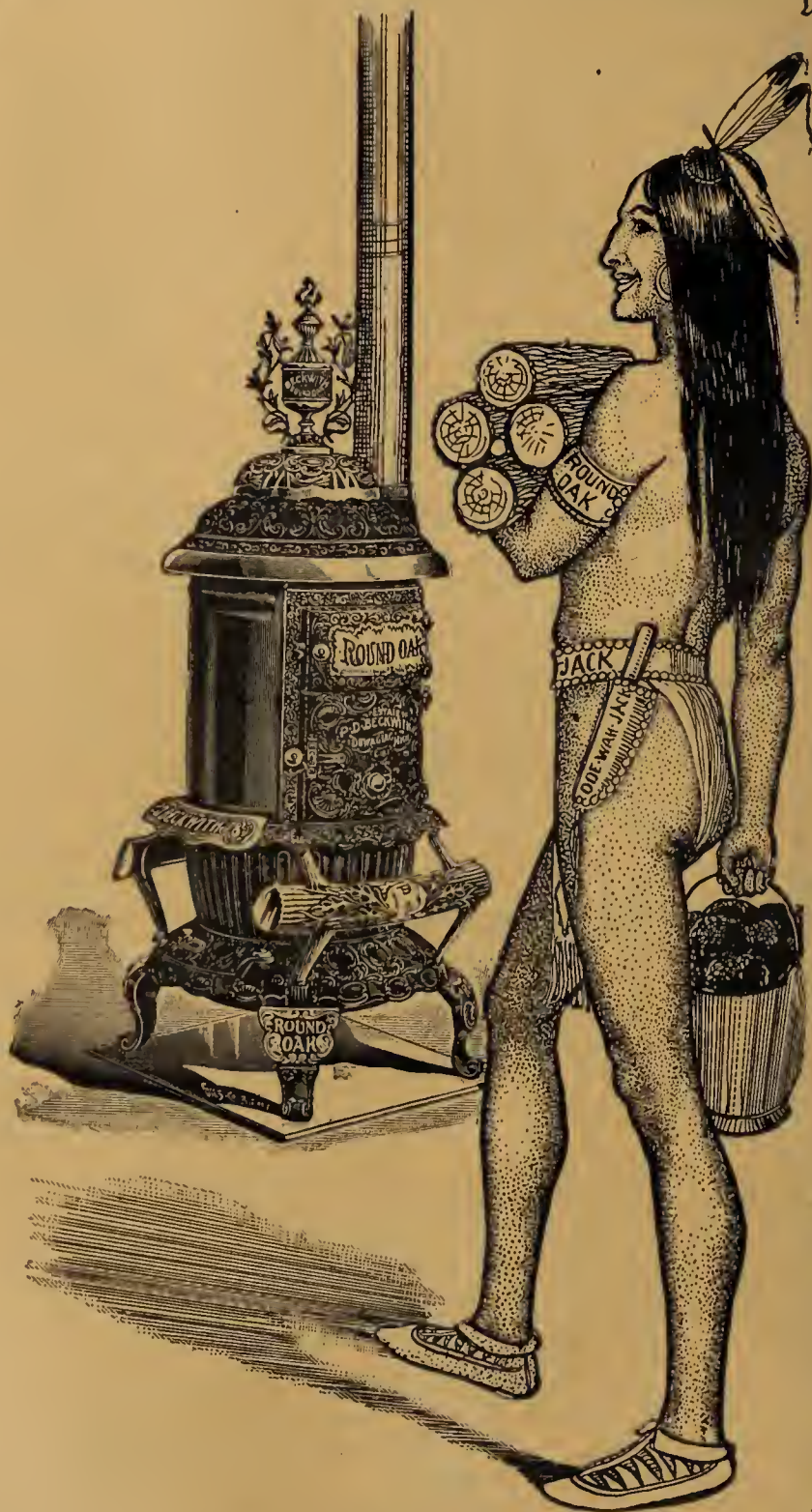
ROUND OAK

Standard of America

We wish to again call attention to the merits of the Genuine Round Oak as a Hard Coal Stove. With or without the magazine, it does perfect work. It is all "business," no non-radiating mica and nickel plate. Every part radiates heat, consequently it saves lots of fuel. Then, too,

Wood can be burned Fall and Spring

and should hard coal get too costly or hard to get, soft coal can be burned to better advantage than in any other construction on earth. Do you wonder it heads the procession and leads, in sales, the world of heating stoves? Do you sell it?



*Estate of P. D. BECKWITH,
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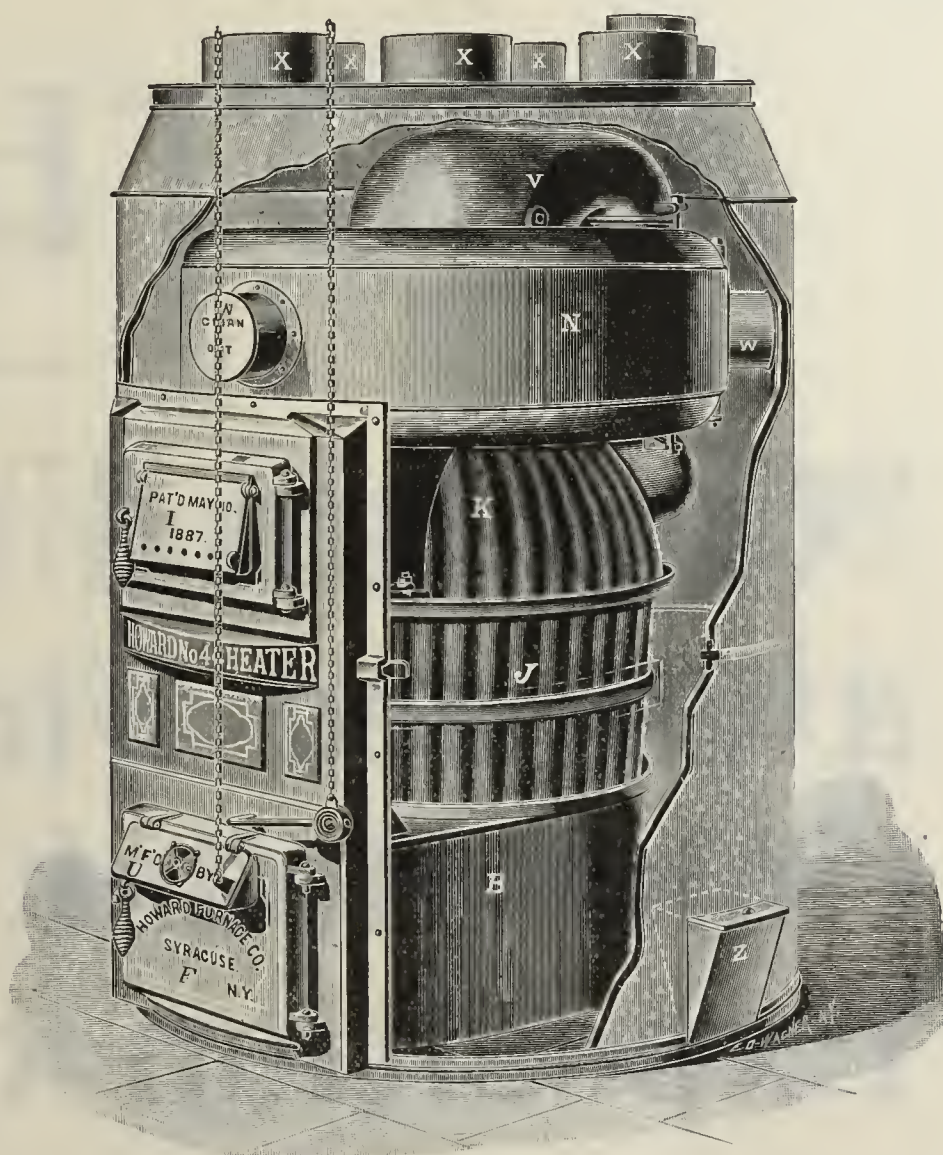
Howard Heaters are in a Class by Themselves.

REMARKABLY EFFICIENT.

FUEL SAVERS EVERY TIME.

The HOWARD

Single Radiator Warm Air Furnace.



Operated upon the "Down Draft" Principle.

A Powerful Heater, Responsive, Easily Controlled.

It is Highly Durable and "First Grade" in every respect.

LET US TELL YOU ABOUT IT.

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LARGEST MAKERS OF HEATERS IN THE WORLD.



First Prize Paris, 1900.



ANOTHER

“Garland” Stove awarded First Prize Gold Medal at the Exposition of 1900

First Prize

The Michigan Stove Works

Largest makers of Stoves

DETROIT, CHICAGO

WORKS AT DETROIT, MICHIGAN.



VICTORY

es and Ranges
ize and the only
e Pan-American

Paris, 1900.

ove Company,

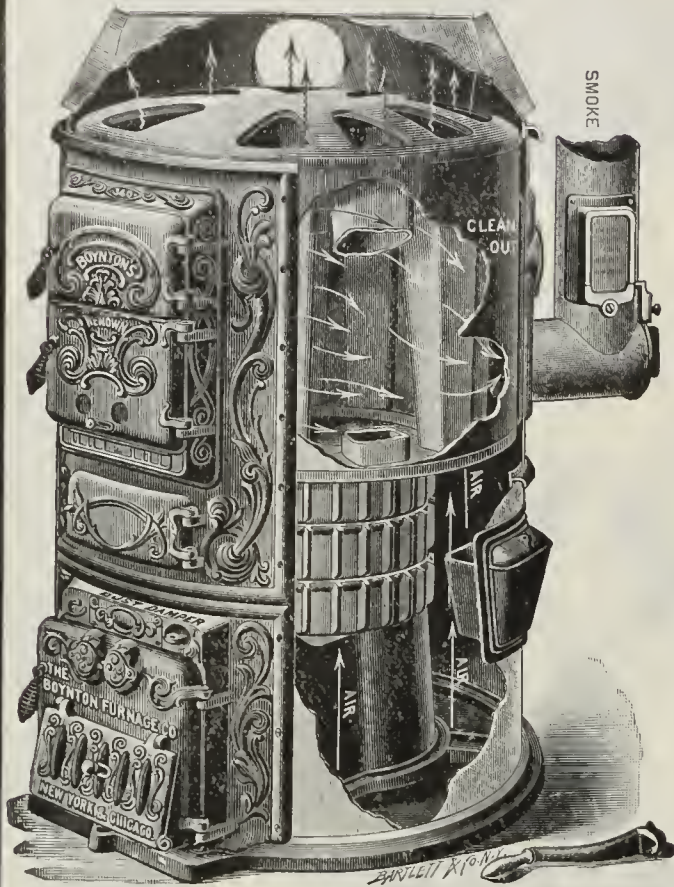
and Ranges in the World.

GO. BUFFALO.



BOYNTON'S "RENOWN"

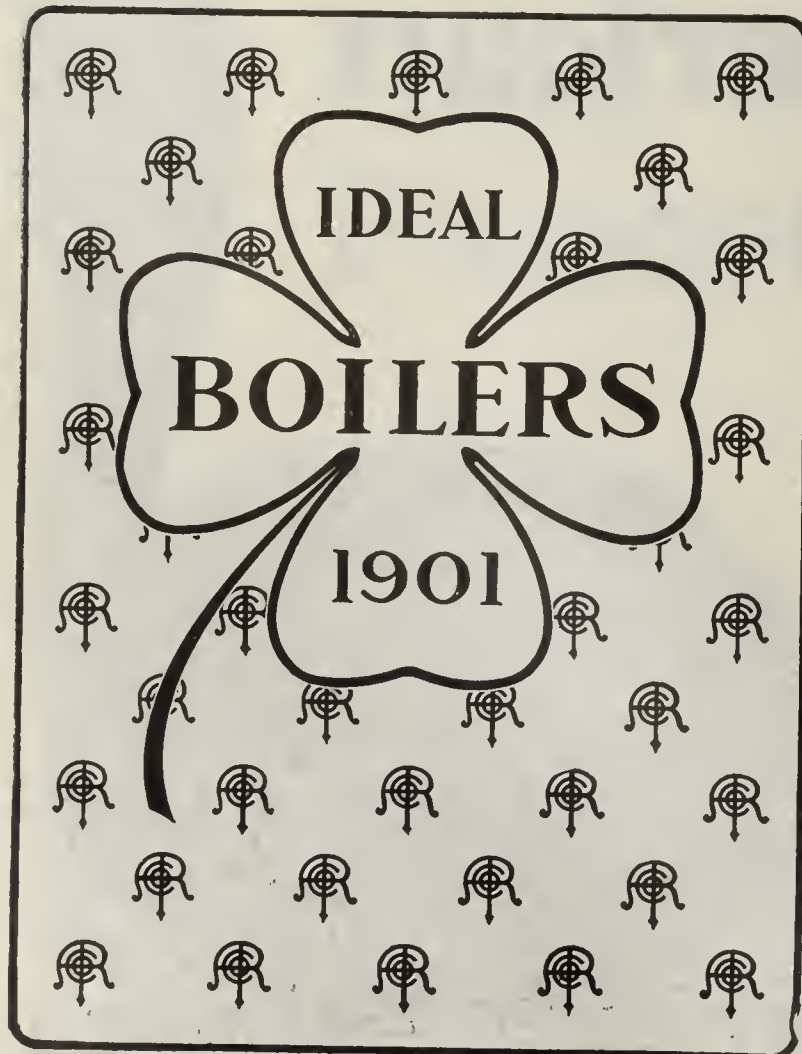
PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
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Our New Boiler Catalogue Now Ready.

A postal card request
will secure a copy...

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver.

The New WALKER BOILER

for Steam: for Water

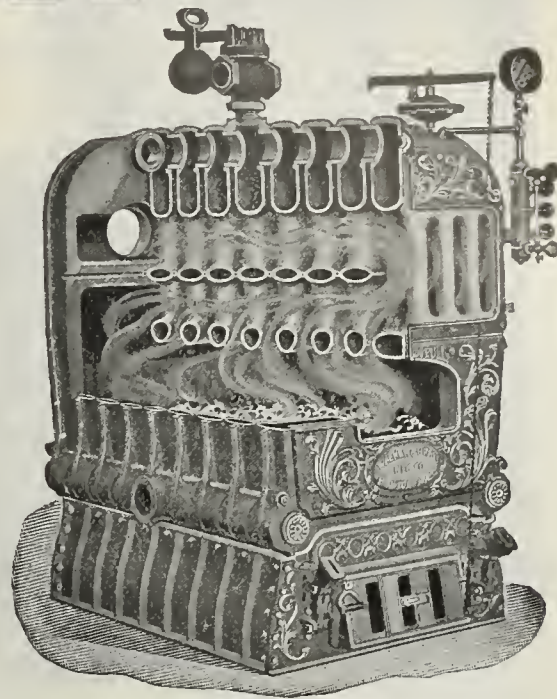
To please particular people, to keep fire over night and have the house warm in the morning, this is the boiler you should use.

For a 600-foot contract buy our 600-foot boiler; if you select any other boiler you don't feel safe unless you select the 850-foot size. No deductions need be made from our "honest-measure" ratings.

If interested, ask catalogue and prices.

Walker & Pratt Mfg.
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31-35 Union St., BOSTON, MASS.



Makers Also of

CRAWFORD
RANGES.

Finest Factory in this Line in the World.

READ OUR OFFERINGS.

Special Advantages Over All Other Heaters.



OUR HEATERS are only 4 ft. 3 in. high, giving excellent elevation for Hot Air Pipes.

OUR HEATERS ARE ALL CAST IRON, no repairing of sheet iron drums necessary every few years.

OUR MANIFOLD TUBES are steel, $\frac{1}{8}$ inch thick, and will wear for a lifetime.

OUR HEATERS are supplied with the most modern grates, perfect dumping and shaking. Each bar can be separately replaced.

OUR HEATERS are so arranged that they can be perfectly cleaned by any one, and in a few moments.

Equally Efficient with Hard or Soft Coal.

Our Heaters save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE, REFERENCES AND FULL PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

MANUFACTURERS of the FORBES WARM AIR FURNACE.

232 Quarry St.,

PHILADELPHIA, PA.



CINDERELLA

STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.
We would be pleased to send our catalogue.



PITTSBURGH STOVE & RANGE CO.,

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WESTERN SALES AGENT,

W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.



“Norman” Steel Range.

BUILT LIKE A WATCH.



ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the “NORMAN” Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

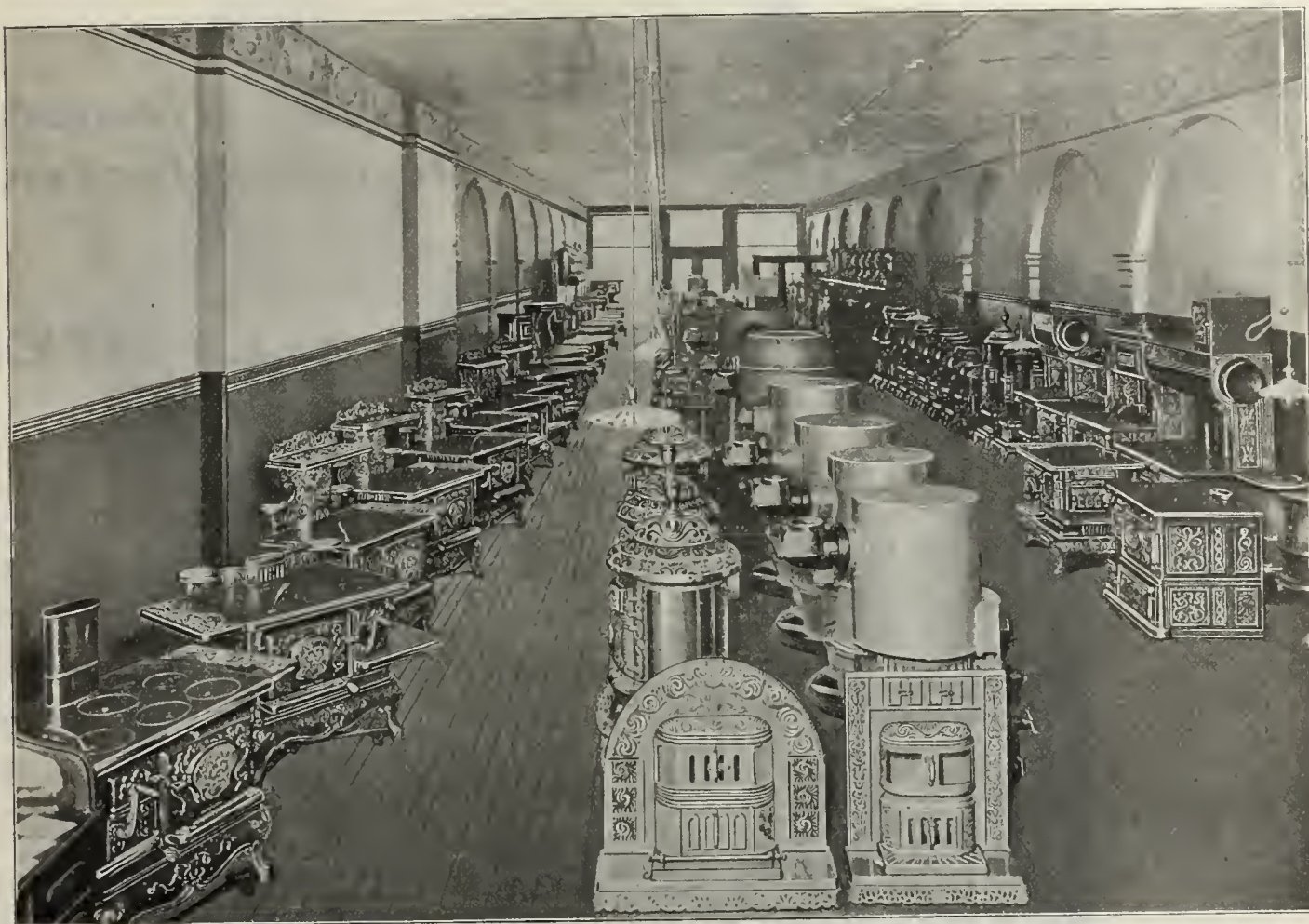
Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

NEW ENGLAND BRANCH

Sunshine Stove Shop



Nothing is too good for our New England customers and we keep our large warehouse at 86-90 Canal St. and 171-175 Friend St., Boston, fully stocked with SUNSHINE Stoves, Ranges, Furnaces, Steam Heaters and Hot Water Heaters and are ready to fill orders on receipt. We got ready in time.

If you don't have our brand new 1901 catalogue send a postal and a copy will come by next mail. If you have the catalogue send us your orders.

We are running our three big foundries full handed and every day making stoves. That is our medal. Note advertisement on following pages.

THE READING STOVE WORKS

ORR, PAINTER & CO.

Main Office and Foundries,

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PHILA.
64-66 N. 2nd St.

CHICAGO
153-159 S. Jefferson St.

BOSTON
86-90 Canal St.

BUFFALO
411 William St.

Sunshine Oak

Single Heaters
Double Heaters

ALL SIZES

The 22 inch is the largest Oak stove made and its heating power is simply wonderful.

The double heater style makes the best school room heater. It gives an abundance of heat and keeps the air in constant circulation.

SEE PAGES
9 and 11.

The
Reading
Stove
Works

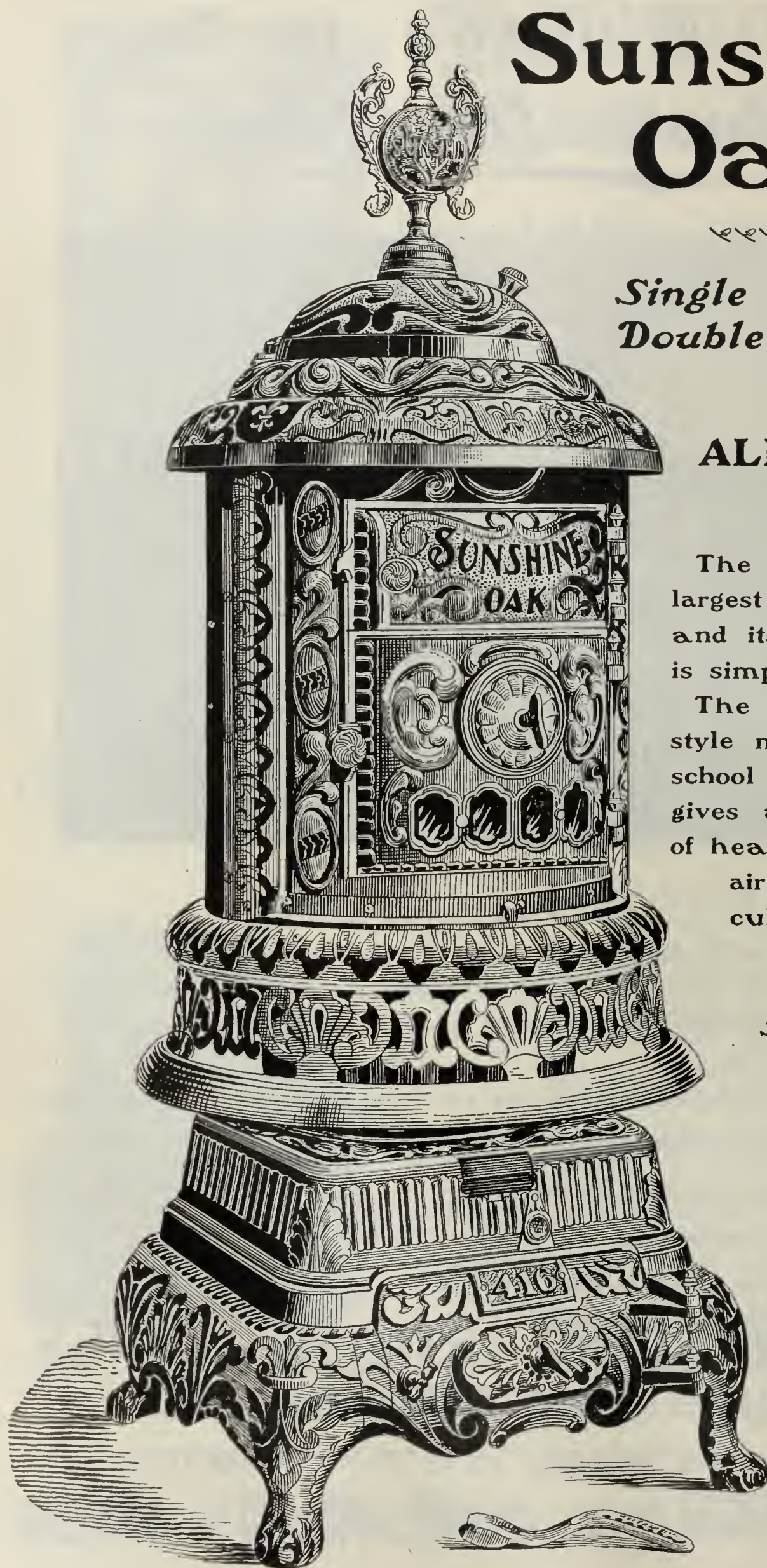
Orr, Painter
& Co.

Main Office and Foundries
READING, PA.

Western Foundry
DAYTON, OHIO

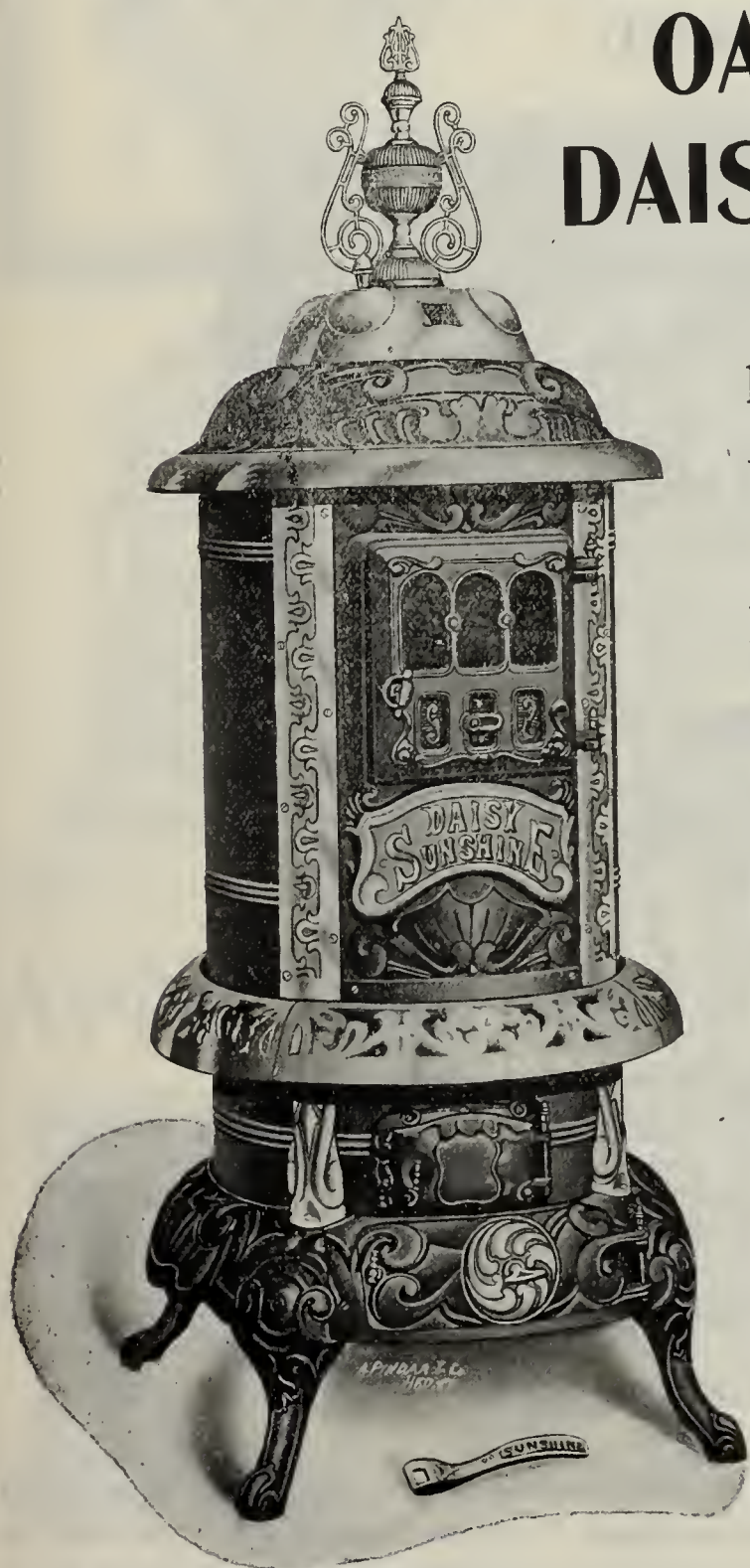
BRANCHES

153-159 S. Jefferson St., CHICAGO
86-90 Canal St., BOSTON
64-66 N. 2d St., PHILADELPHIA
411 William St., BUFFALO



Sunshine Stove Shop

OAKS ARE GOOD DAISYS ARE BETTER



DAISY SUNSHINE

This is the stove that you heard about. It has stirred things up and will keep them stirred.

The DAISY SUNSHINE has a style of its own, hence it's an advantage to the dealer. If you don't control sale of it in your town get it.

Single Heaters

Nos. 114, 116, 118

Double Heaters

Nos. 314, 316, 318

If you haven't seen the DAISY SUNSHINE order a sample. You'll want more.

We ship on receipt of orders.

See Pages 9 and 10.

THE READING STOVE WORKS ORR, PAINTER & CO.

Reading, Pa.

BOSTON
86-90 Canal St.

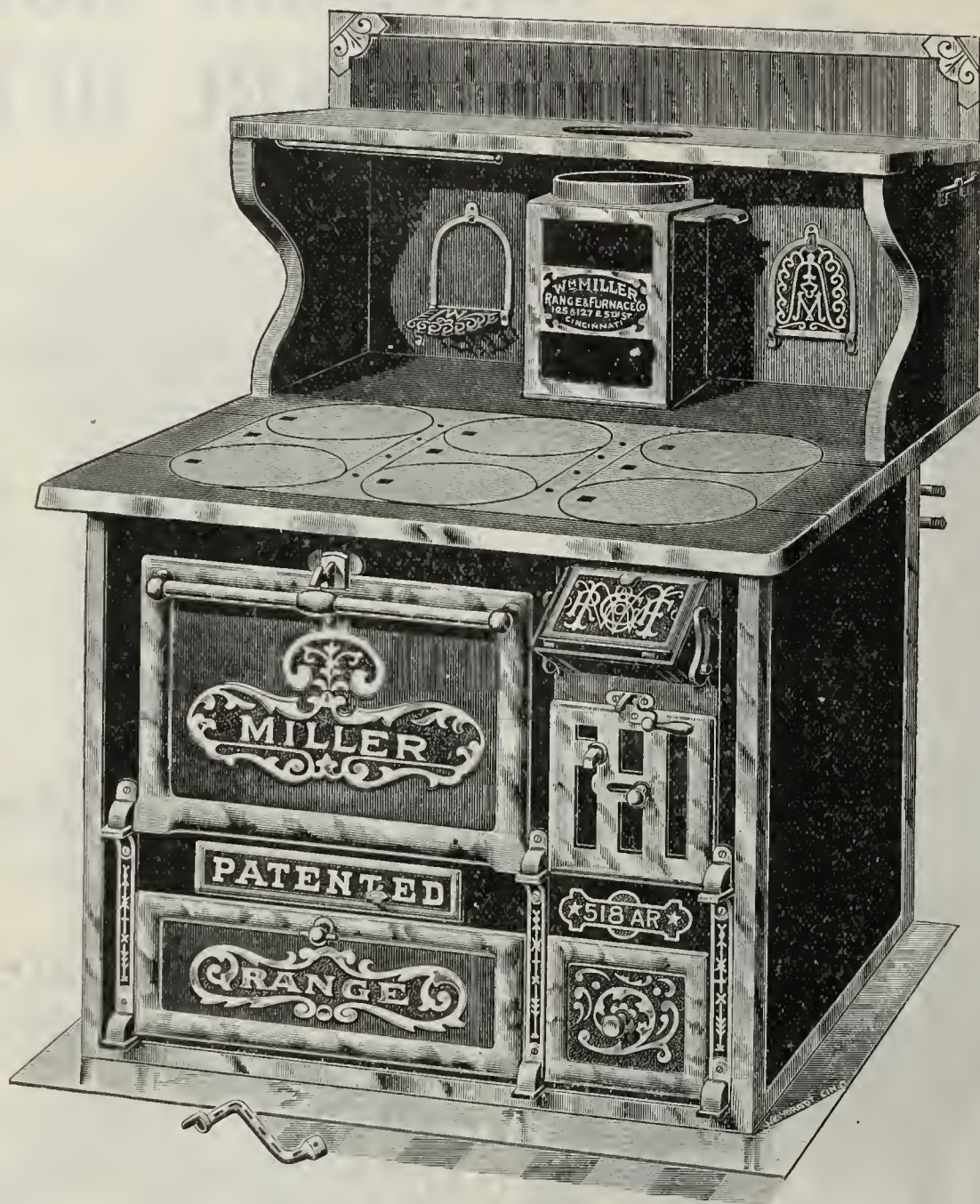
BUFFALO
411 William St.

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THE NEW "MILLER"

The Latest, Best and Handsomest Range
on Earth.



AN EXPERIENCE OF FORTY YEARS enables us to place these Ranges upon the market so far in advance of all other Steel Ranges that it would be but a sheer waste of time for any of our self-styled competitors to attempt to keep pace with them.

The Miller possesses all of the *Latest Improved Modern Appliances*, and is constructed *strictly upon Scientific Principles*, with a view to *Economy, Durability, Perfect Baking, Cleanliness and General Utility*, and with our long experience in the construction of Steel Ranges we candidly say to you that these Ranges are the results of our best efforts.

Special attention is called to the easy manner of Removing and Replacing the Grates and Grate Frames in these Ranges without interfering with the Water Backs or Linings. Simply by taking out the small bolt and removing the Front Grate the entire Bottom Grate and Frame can be drawn out through the Front Draft Door. Attention is also called to the New Non-Warping Oven Bottom, which is made in two pieces. Each piece is flanged downward, then firmly riveted together, which stiffens the bottom. The seam is thoroughly protected underneath, and the bottom is firmly riveted to the bottom of the Range, making practically a Perfect Non-Warping Oven Bottom. When Wood is burned exclusively in these Ranges we extend the Firebox the full depth of Range, and put on a Swing Feed-Door. Same price.

The Wm. Miller Range & Furnace Co.,

NO. 125 and 127 EAST FIFTH ST., CINCINNATI, O.



CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES

CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

ECONOMY GAS HEATING STOVES.

FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, *Durable, Economical* and *Attractive* gas heating stoves on earth.

The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market

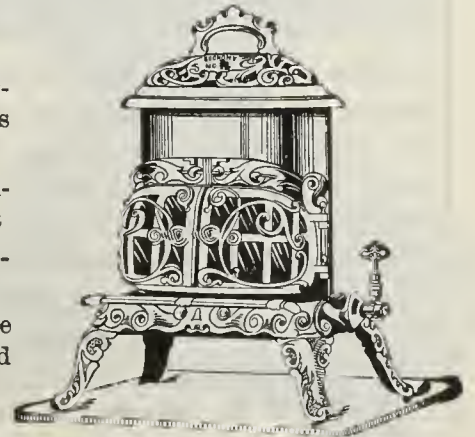
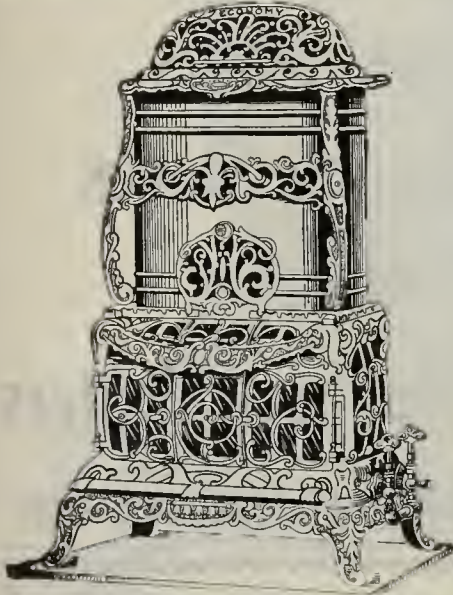
Absolutely free from odor or condensation.

By securing the agency for the *Economy*, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

ECONOMY STOVE & MFG. CO.,

Write for Catalog.

DETROIT, MICH.



Apply All The Tests

to *Schill's Furnaces and Ranges*, and they will fill the bill every time. Whether the test be durability or economy of fuel, satisfaction to the user or salability. They never fail to meet every requirement.

Write for Catalogue and Prices.

THE SCHILL BROS. CO.,
CRESTLINE, O.



**GAS STOVES
& BURNERS.**

**H. ADLER
CO.
PITTSBURG,
PA.**



**WRITE FOR
CATALOGUE
NO 34**

**THE MOST
COMPLETE LINE
FOR ALL GASES**

A 62-PAGE PAMPHLET

Comprising a Series of Articles and Letters on *Chimney Troubles and Their Remedies* published under the title



Contains a compilation from the columns of THE METAL WORKER, of articles and correspondence relating to house chimneys, defective flues, and kindred topics, comprising a source of information of the most practical and reliable nature, on overcoming difficulties which occur in the working of chimneys, flues, etc.

To all who are interested in flues and drafts, in their relation to stoves, furnaces and house heating apparatus, this book will prove instructive and helpful.

The Contents are as follows

	Page.
POINTS ON CHIMNEYS . . .	7-32
An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES . . .	33-35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.	
HOW TO IMPROVE A WEAK CHIMNEY	36-40
VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
CONNECTED FLUES DESTROY DRAFT	52-55
FAILS TO BAKE ON BOTTOM	56-62

40 good Illustrations help to make the Text clear.

Price, Postpaid 25c.

DAVID WILLIAMS CO.
PUBLISHERS
232-238 William Street, N. Y.



THE B. C. BIBB STOVE CO.

Baltimore, Md.

Oak Stoves
Air-Tight Stoves
Cook Stoves
Heating Stoves
Furnaces
Fire-Place Heaters

SEND FOR CATALOGUE AND PRICES.



New Victor Oak

For COAL, WOOD, GAS or COKE.

Briefly the points of superiority in these stoves are:

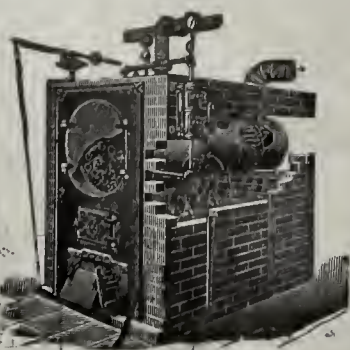
Smooth Castings, Jointless Ash Pit, Cam Register, Close Fitting Doors with Self Fastening Buckles, Joints Filled with Asbestos Cement, Absolutely Air-tight, Can be Furnished with Hot Blast Pipe, Inside Fire Pot, Steel Liners or Magazine. . . .

There are other features which will interest you. Made in five sizes for Wood or Coal.

Write for our New Catalogue.

Victor Stove Co.,
SALEM, OHIO.

Western Branch: Victor Stove Co., 167-169 Lake St., Chicago. JACOB RETTERER, Agt.



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,

373 Atkinson St.,

Geneva, N. Y.

The Portsmouth Stove & Range Co.,

Portsmouth, O.

MORLEY BROS., Saginaw, Michigan, Agents for Northwest.



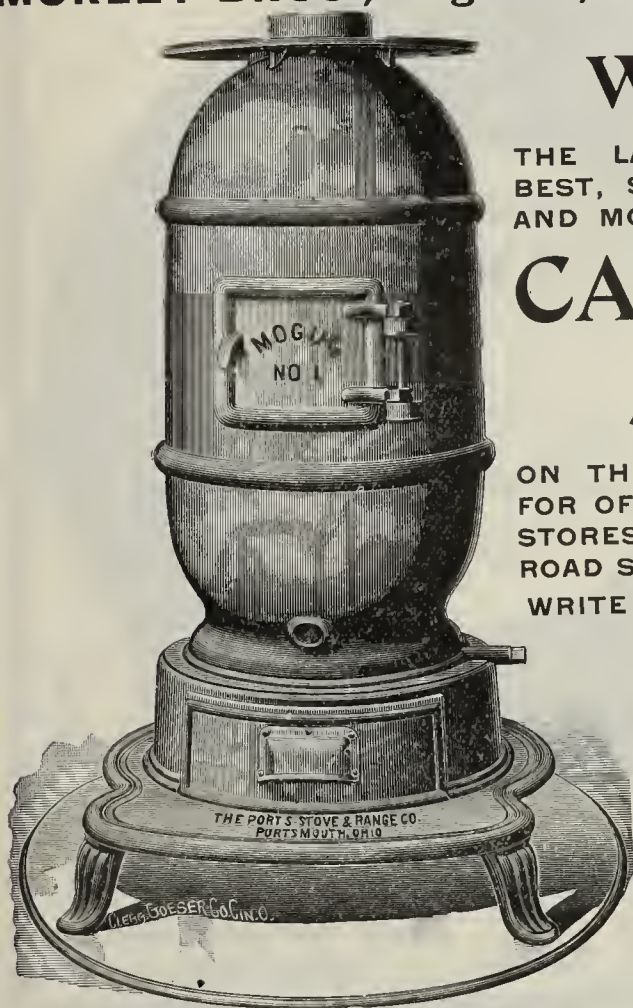
We Make

THE LARGEST LINE OF THE
BEST, SMOOTHEST, HEAVIEST
AND MOST RELIABLE

CANNON STOVES

ON THE MARKET. SUITABLE
FOR OFFICES, SCHOOLHOUSES,
STORES, CHURCHES AND RAIL-
ROAD SHOPS.

WRITE US FOR BOTTOM PRICES.



If It's a Question of Price—

When it's a question of price, largely, when there's sharp competitive figuring, or when a low-priced heater is wanted for houses built for speculative purposes, we wouldn't advise you to offer the Magee Boston Heater. Specify, then, the

MAGEE COTTAGE FURNACE.

It isn't our *best* furnace, but it's a *good* furnace. It meets a wide range of requirements, but it doesn't perform miracles. We don't think there's as good a heater at as low a price. We wouldn't make one for less and you couldn't afford to handle it if we did.

MAGEE FURNACE CO., BOSTON.

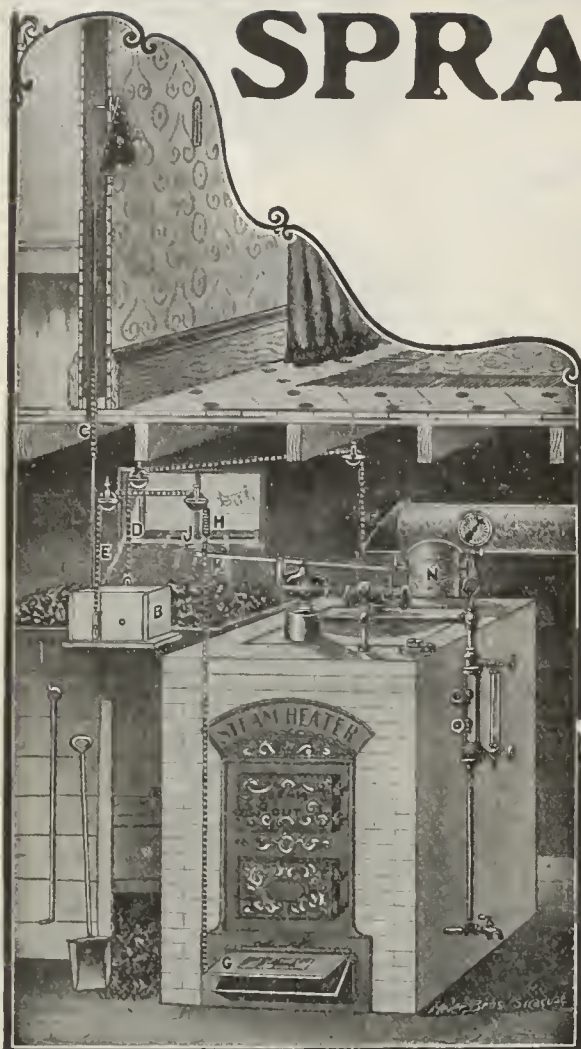
Most Complete Line under One Name
in the United States.



With or
without
Casings.
6 sizes.
Capacities,
6,000 to
40,000
cubic feet.

RUSSELL & RICHARDSON-SC

SPRAGUE Damper and Valve Regulator.



Made by **HOWARD THERMOSTAT CO.,** West Water Street,
OSWEGO, N. Y.

STILL IN THE LEAD!



DOUBLE RADIATOR. ALL CAST IRON.

MUELLER

Furnaces and Boilers

ALWAYS TO THE FRONT.

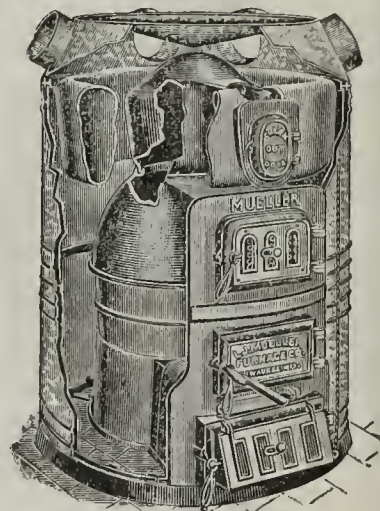
Made in all Sizes.

For all Kinds of Fuel.

Write for Catalogue and Prices.

EVERYTHING IN THE HEATING LINE.

GET OUR SPECIAL REGISTER OFFER.



RETURN FLUE RADIATOR.
ALL CAST FURNACE.

L. J. MUELLER FURNACE CO.,

Established 1857.

190 Reed St.,

MILWAUKEE, WIS.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

SAMPLES *Ready for Shipment
About Dec. First*

OF TWO NEW FURNACES—

The Solid Comfort Furnace (For Soft Coal)

And its companion Furnace,

The Quaker (For Hard Coal)

Made in Four Sizes.

(Named After the Quaker State, Home of the Anthracite Mines).

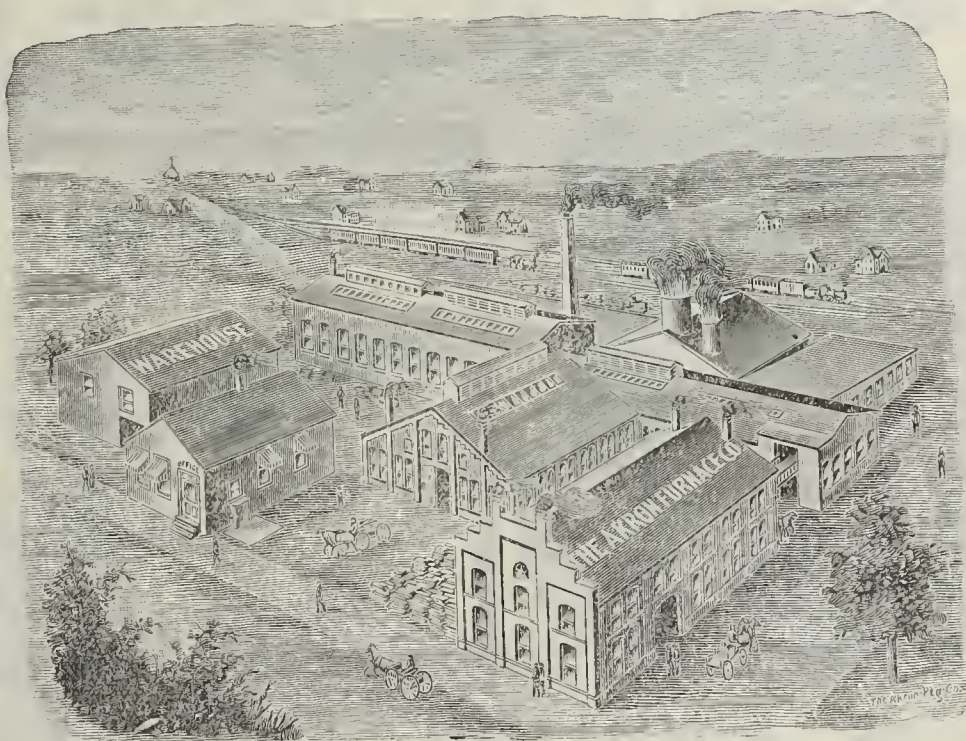
They are up-to-date, reliable, well-made Furnaces, having many special, good, patented features. They are all cast, suitable for low cellars, thus filling a needed place, and will please both dealers and purchasers.

We solicit your orders.

Prices and goods will suit you.

Send for catalogue and Price List.

Respectfully,



CAPACITY 5,000 FURNACES PER YEAR.

THE AKRON FURNACE CO.,

Manufacturers,

Established 1880.

AKRON, OHIO.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
 Furnished for either Brick or Galvanized Iron Casing

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Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.

WEST LIBERTY, IA., June 22, 1900.

THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

Gentlemen:—I had a Stanton Seamless Heater put in my house last year and it gives perfect satisfaction. Have no trouble in keeping the whole house comfortable in the coldest weather.

Anyone wishing a Furnace will not make a mistake in buying a Stanton Seamless Heater.

Yours truly, DR. L. W. STRUBLE.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

MARTIN'S FERRY, OHIO.

SEE OUR ADVERTISEMENT NEXT WEEK.



Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

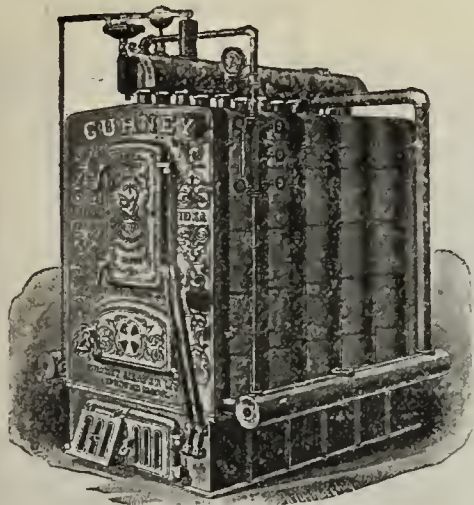
GURNEY

"Bright Idea" Heater

thinks of it: "My house is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.



Bright Idea Steam Boiler.

GURNEY HEATER MFG. CO.,

74 Franklin St., BOSTON, MASS.

111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

BENGAL FURNACES

BEST AND MOST POPULAR MADE.

EASY TO SELL. SURE TO PLEASE.

More Radiating Surface than any other furnace their size.

ADAPTED TO ALL KINDS OF CELLARS.

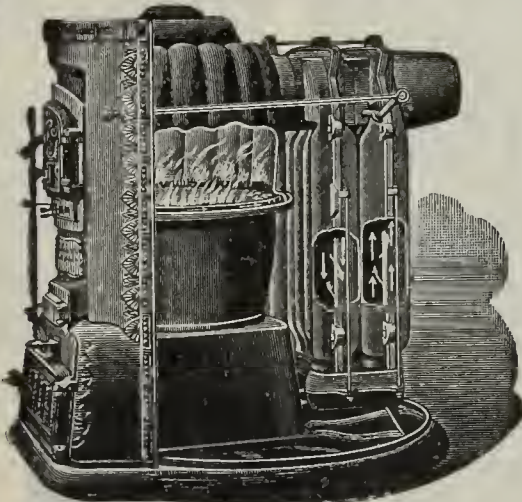
BURN PERFECTLY ANTHRACITE OR BITUMINOUS COAL OR COKE,

—AND—

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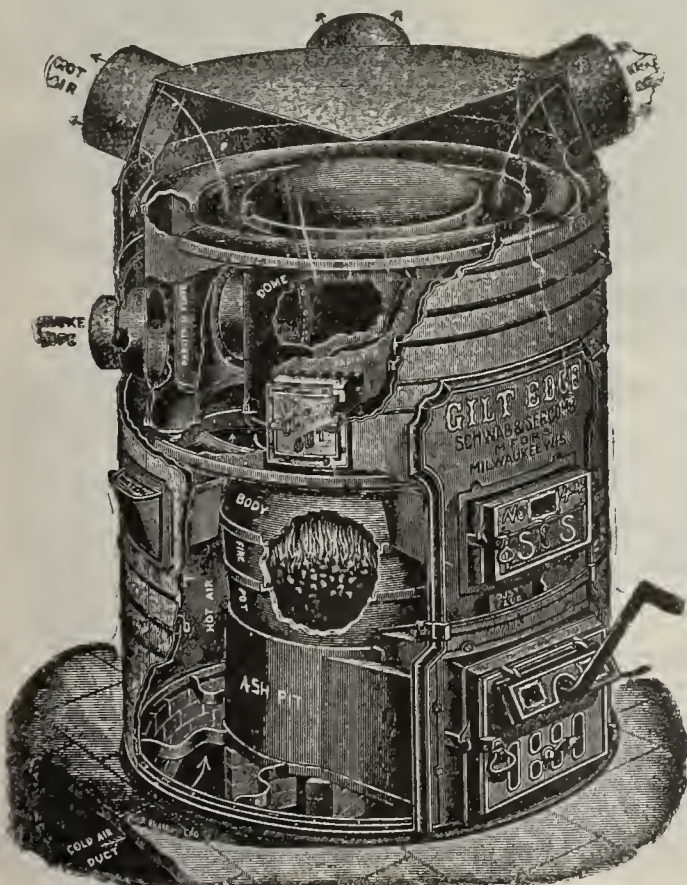
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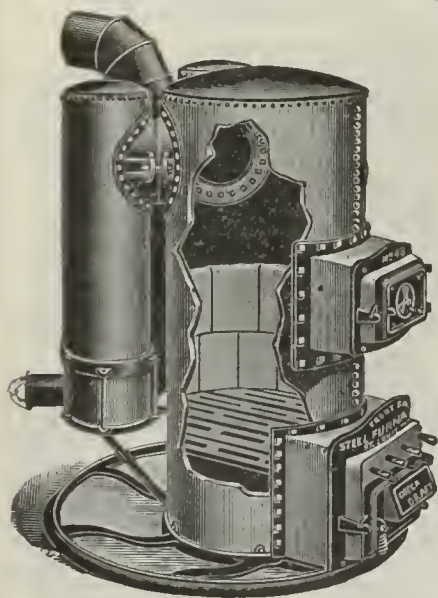
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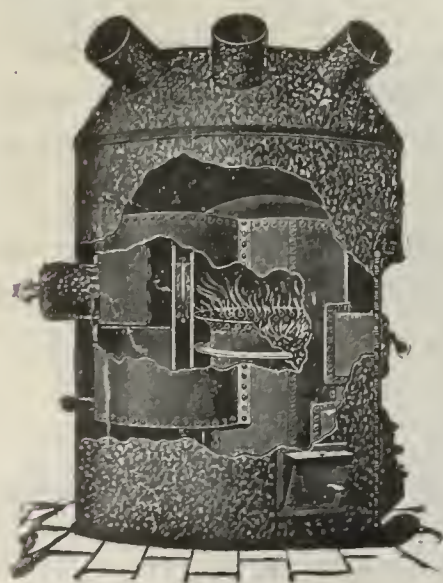
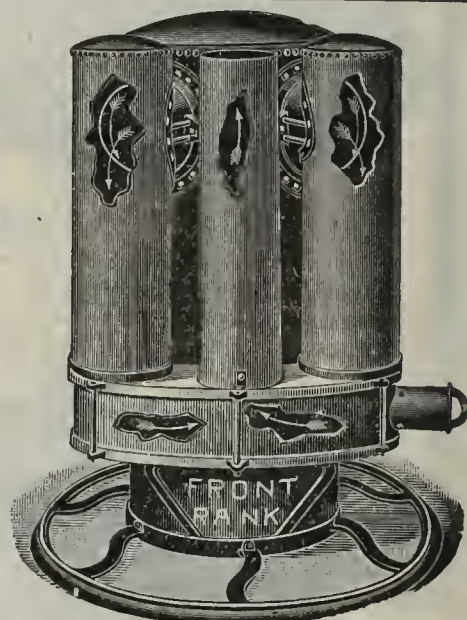
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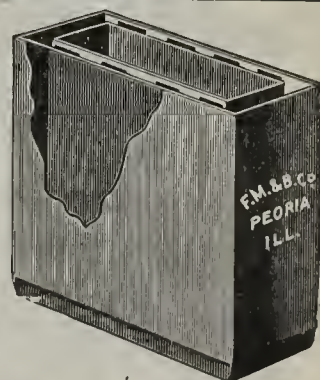
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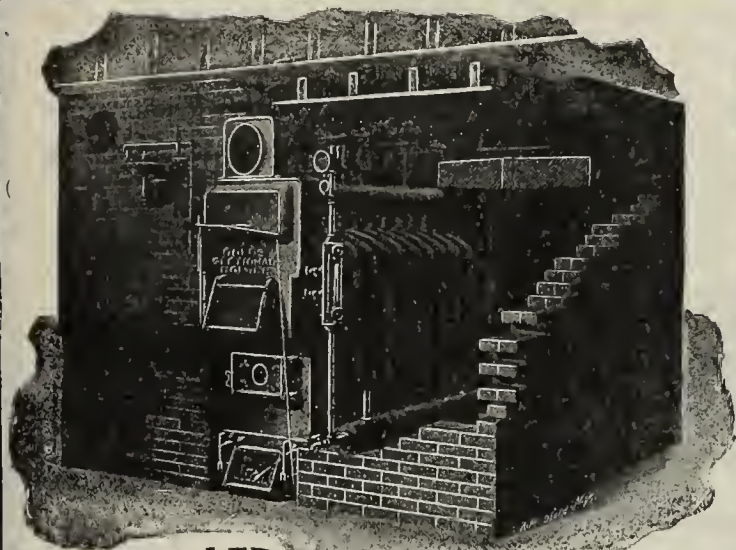
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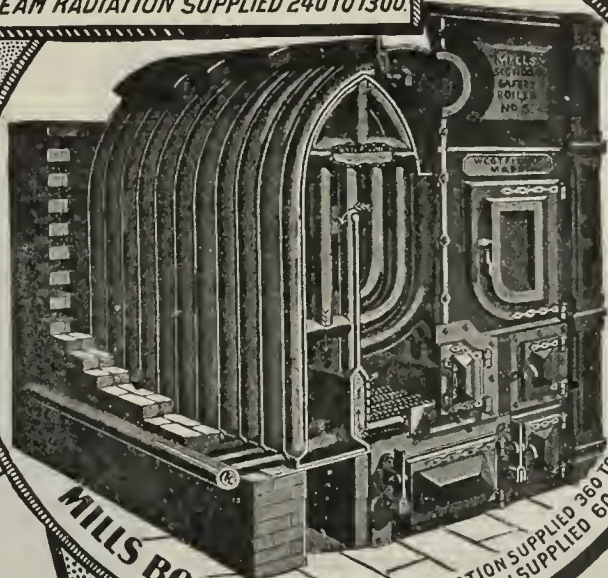
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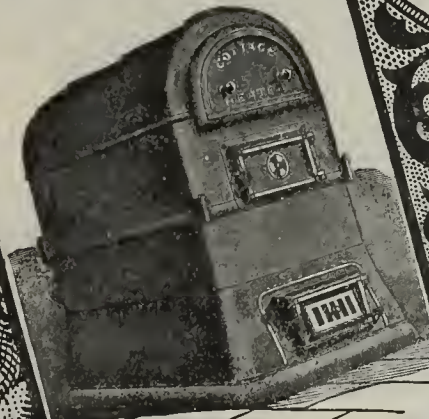


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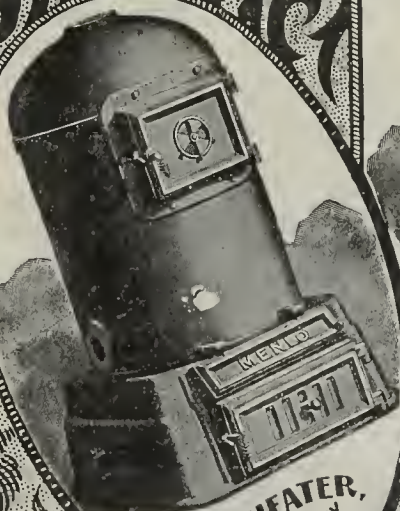


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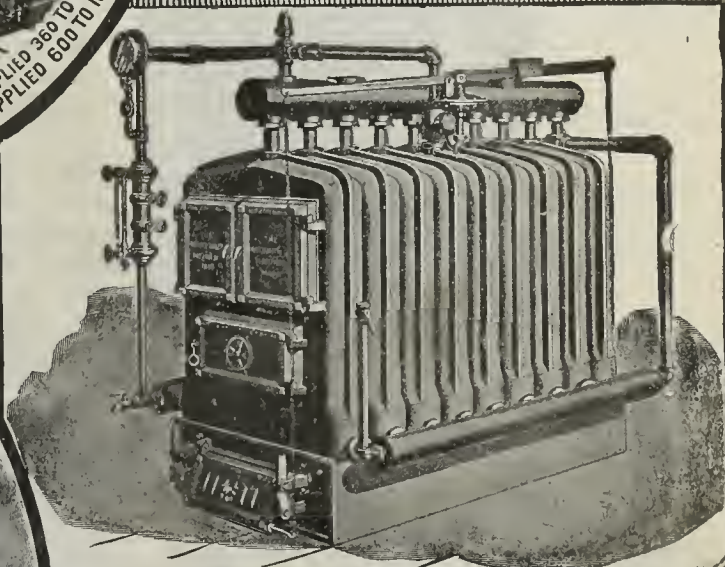
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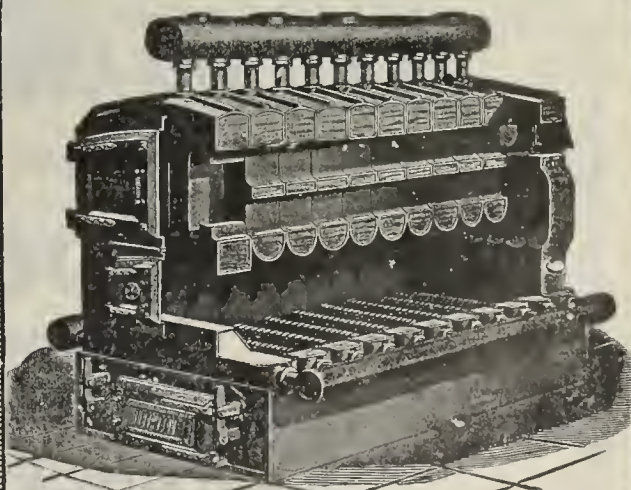
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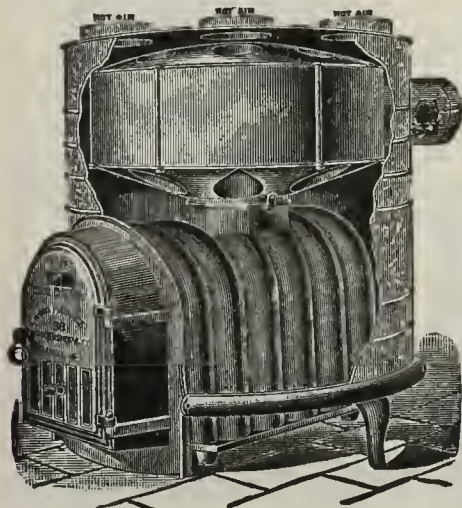
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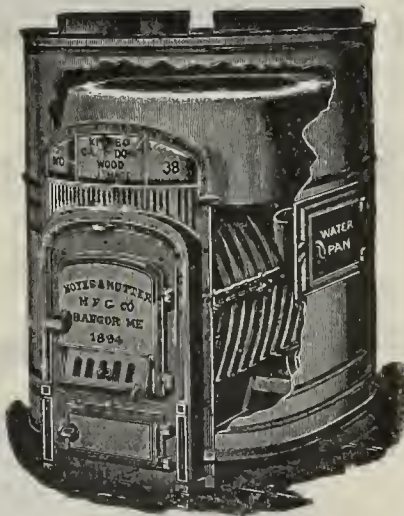
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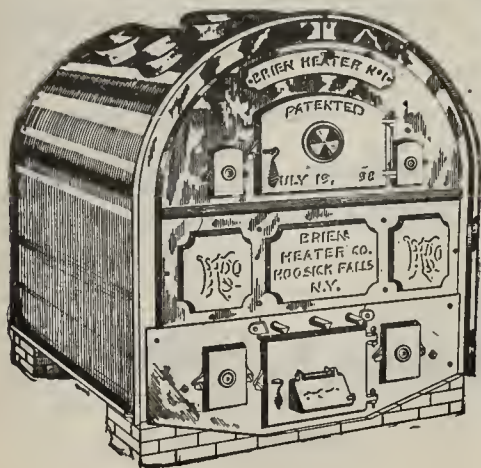


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PARTIAL SUMMARY OF CONTENTS
BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

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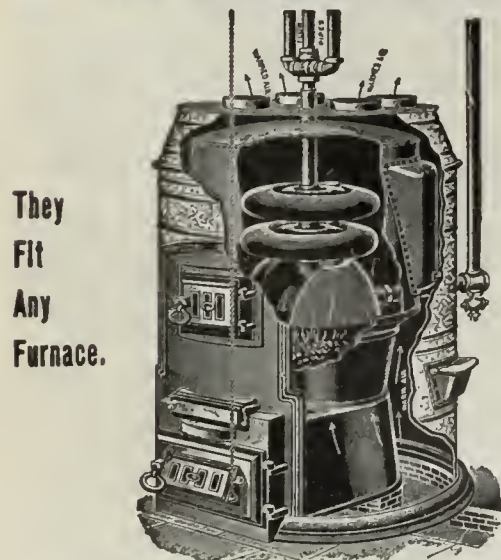
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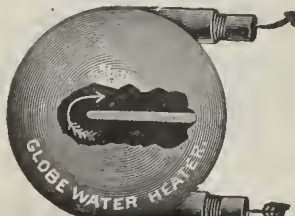
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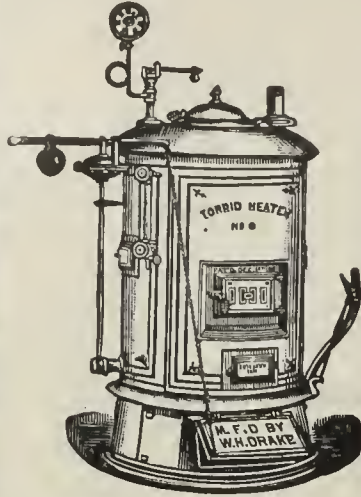
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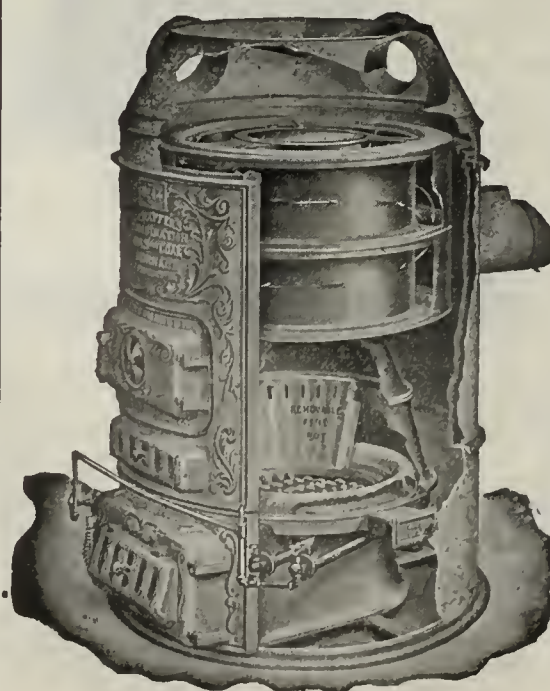
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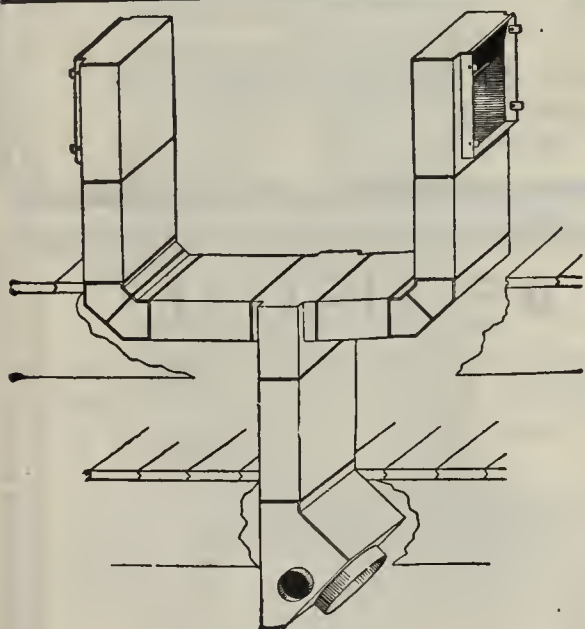
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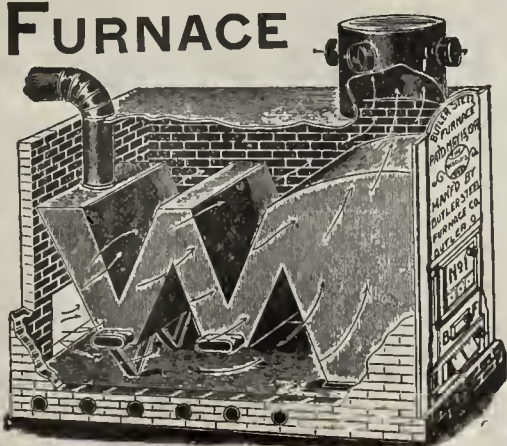
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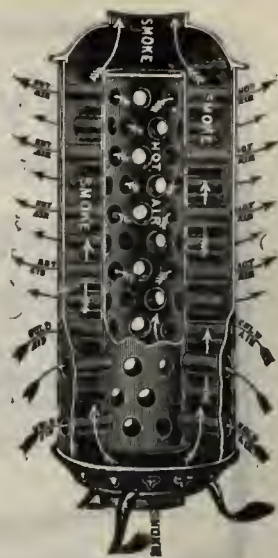
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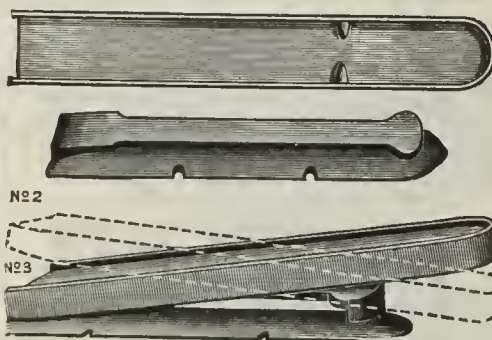
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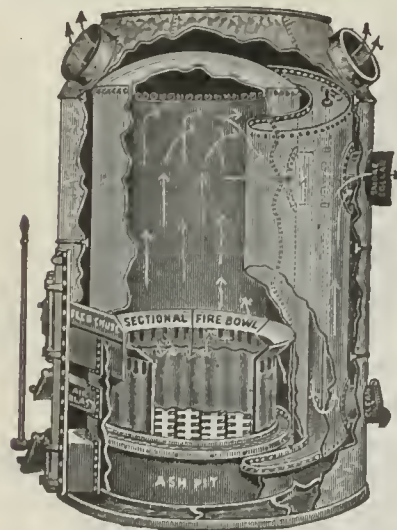
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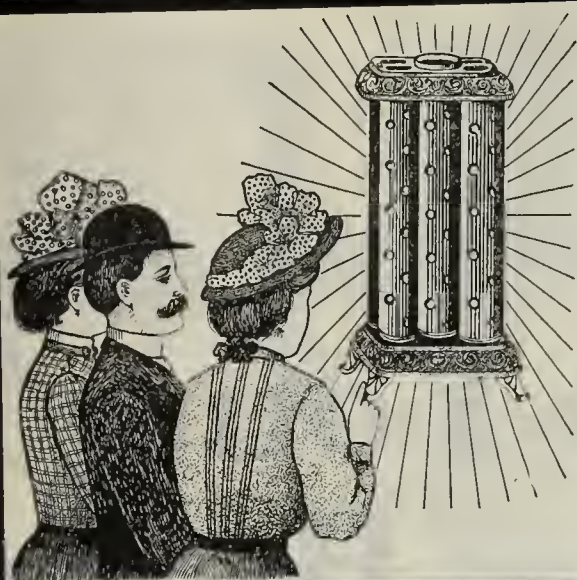
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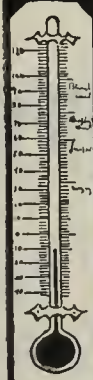
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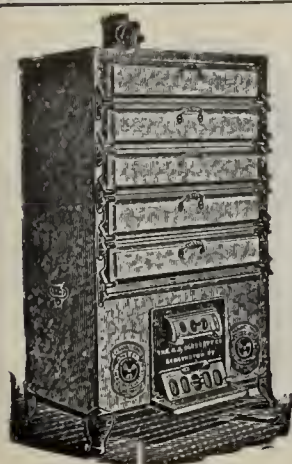
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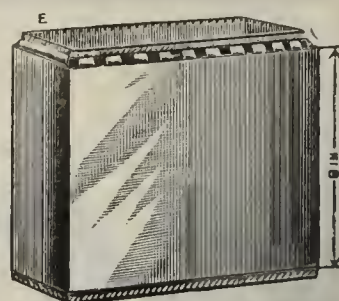
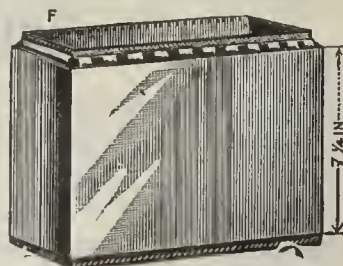
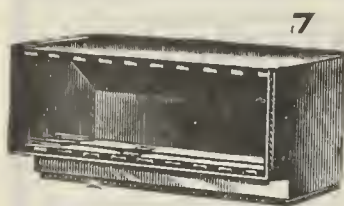
The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



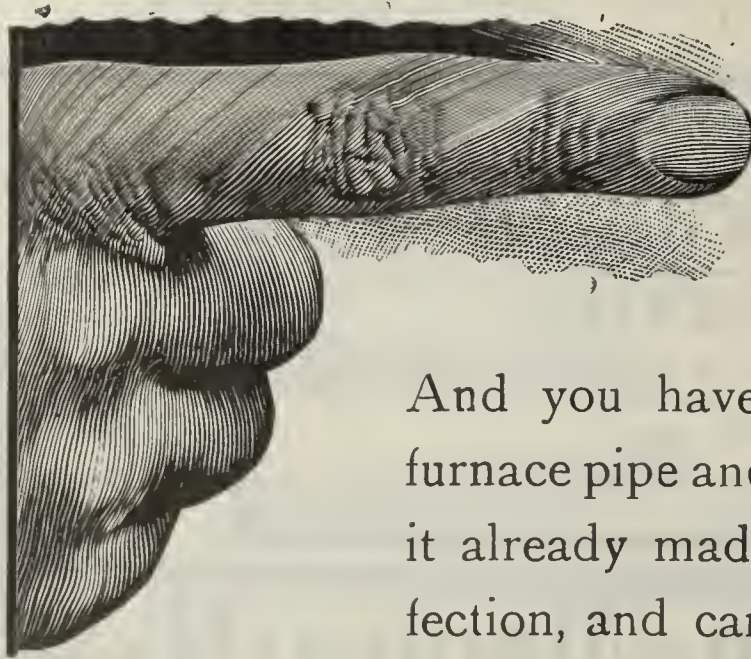
DO you want
Stoves and
Heaters that are
easily sold and

STAY SOLD? We have
been very successful in de-
signing patterns for such.

**THE GOBEILLE PATTERN CO.,
CLEVELAND, OHIO.**



This is Your Busy Time



And you have no time to make furnace pipe and fittings. We have it already made, and it is all Perfection, and can furnish you at a

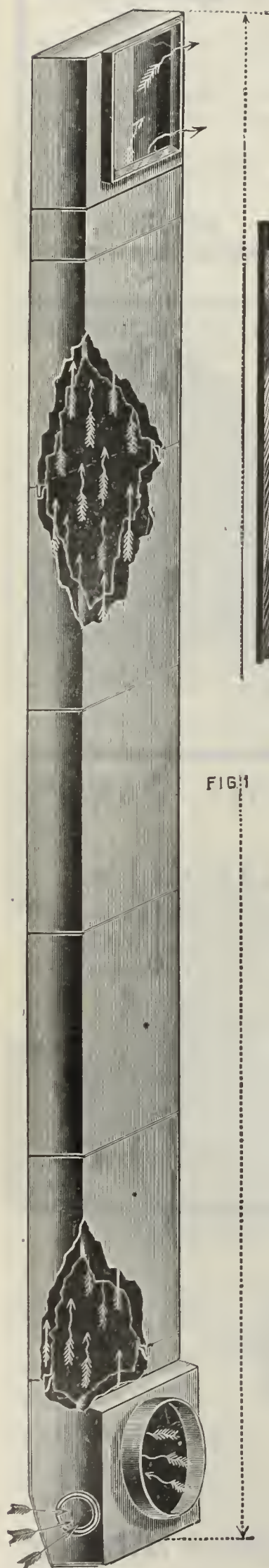
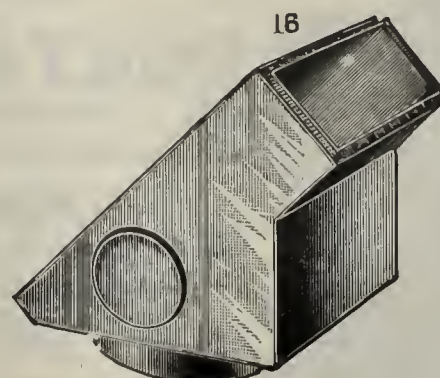
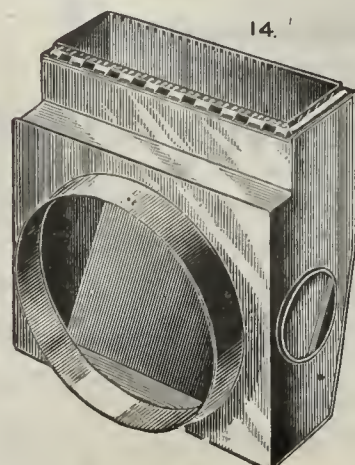
less price than you can make it.

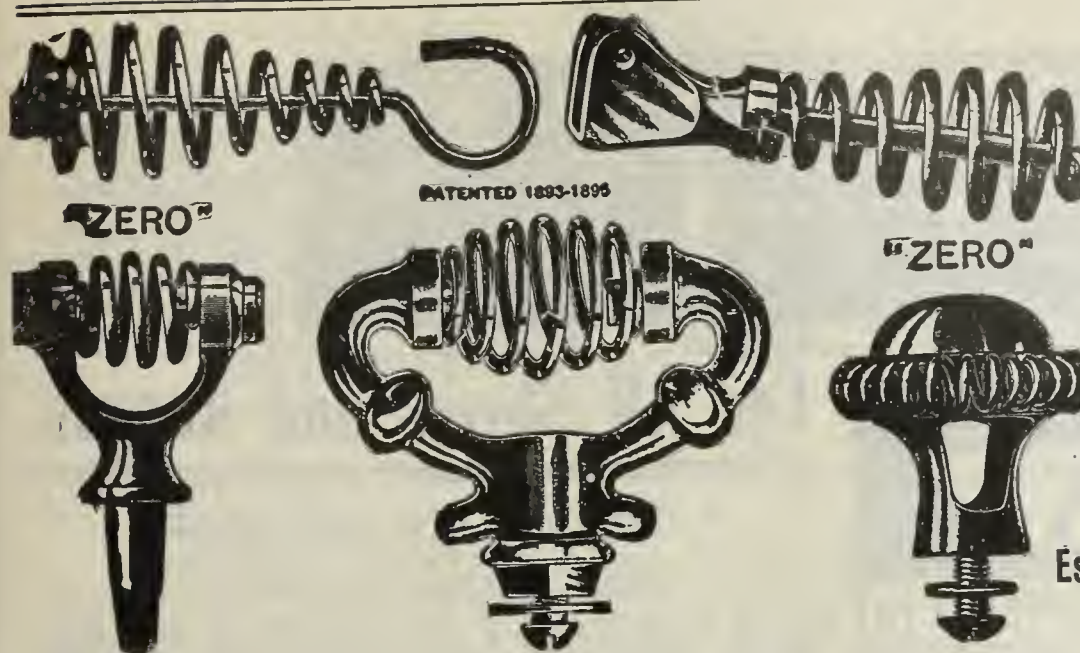
Every joint makes a perfect fit and you can install it in less than half the time required for any other make.

We carry in stock a complete line of Registers, Furnace Cement and Asbestos Paper.

SEND FOR COMPLETE CATALOGUE AND PRICES.

The Perfection Furnace Pipe Co.,
TOLEDO, O.





"ZERO"

PATENTED 1893-1895

"ZERO"

THE BEST
HOT AIR
DAMPER
ATTACHMENT MADE.

"ZERO"

WIRE GOODS.

MANUFACTURED BY

Est. of **W. F. GREENE,**
TROY, N. Y.

There is No Argument



Half so convincing as the evidence of your own experience. For that reason we want you to carry **RUTLAND LINING** in stock.

We want you to know what a really good plastic lining is.

60 Wabash Ave.,
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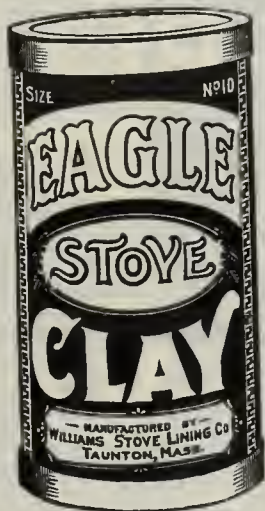
Rutland Fire Clay Co.,
RUTLAND, VT.



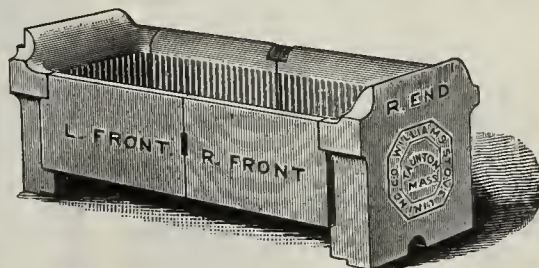
INCANDESCENT Gas Fuel.



Prices and samples
free by mail.



STOVE Brick Linings.



Prompt shipment and
best quality guaranteed.

WILLIAMS STOVE LINING CO., = Taunton, Mass.



"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, **DOUBLE LOCK SEAM** in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

Largest and
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Special Stock of
WATER FRONTS,
Thoroughly Fitted and
Tested.



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40-42-44-46 Union St.,
BOSTON.
Factory, Charlestown.

Duplicate Postals, Order
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opes, Catalogues fur-
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A PERFECT FIT

For All Stoves and Ranges.

*Mica, Stove Polish, Stove
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STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

**Water Fronts
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WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or
Envelopes sent upon application.

Largest Jobbers in New England

HENRY N. CLARK CO.,

56 and 58 Union St.,

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SHINES FOR ALL

It is the polishers friend, and
will polish anything
Write for free sample
to

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ington St.,

Ind'p'l's,
Ind.

GEO. W. HOFFMAN



PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vodder Pattern Works, - Troy, N. Y.

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Ornamental and Stove Patterns.

Sketches and Designs for Stove Work
of all kinds.

Correspondence Solicited.

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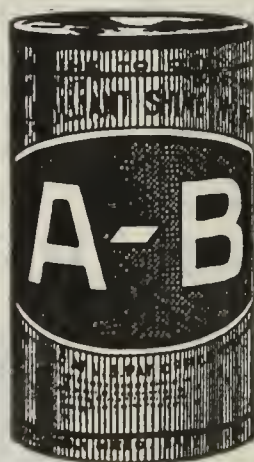
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WE SELL ONLY
**STOVE REPAIRS,
FIRE BRICK,
WATER FRONTS.**

SEND US
YOUR ORDERS.

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50 So. Division St., BUFFALO, N. Y.



**To Stove Dealers
NOTICE.**

Do you know that the new A-B dealers' stove polish is made dry and you can thin it as you wish. It is the cheapest, brightest and easiest polish to use—no dust—no rust—waterproof. Keeps in any climate. Put up in 5 lb boxes—Patented. No tin cans to pay for. Mixes quicker than paste; no drying up, good always. Used by a great many stove manufacturers who are sending duplicate orders. Sample mailed Free. Send for price list, it will save you money.

AYLING BROS.,

Sole Manufacturers and Patentees of A-B Stove Polish.

Office and Works, 14 Haddon Ave.,

Address Department B.

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OLD SAWS

Do not cut much ice, neither do out-of-date goods. Why not be in line with the most progressive element of the day and use **Original Stove Repairs?** One strong point in their favor is that they fit.

Original order book gratis with first shipment.

UNION STOVE REPAIR CO.,

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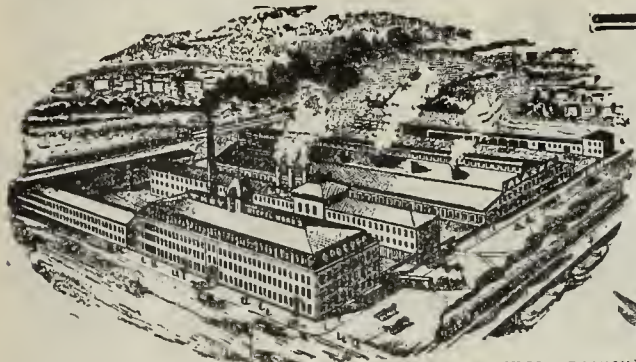
**DIXON'S
Brazing Graphite**

Prevents the brass from running over and sticking to the metal. Used and recommended by bicycle makers and repairers and others. Send for sample and price.

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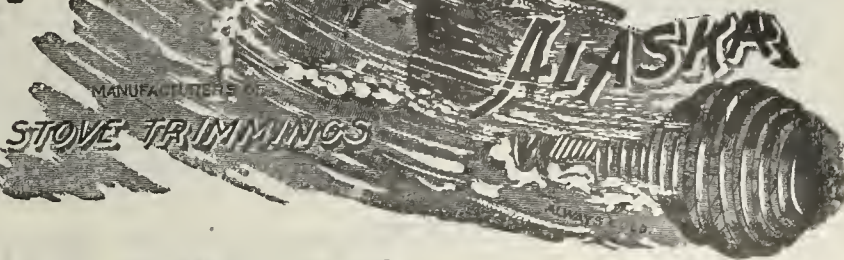
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FACTORY & MAIN OFFICE, ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

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Albany, N.Y.

POKERS, LID LIFTERS, KNOBS, HANDLES, and a full line of **HARDWARE.**

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

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FIRE-BRICK FACTORY, 36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:

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**STOVE REPAIRS
WATER FRONTS**

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.

Repairs for 20,000 different stoves and furnaces.

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CUPOLA LININGS A SPECIALTY.

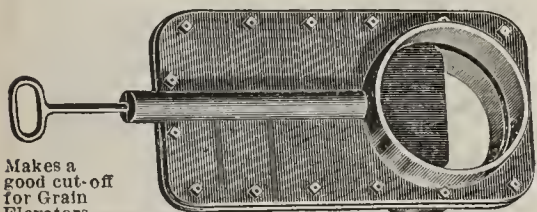
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The STAR NON CLINKER BRICK will outlast all others
—and are GUARANTEED TO FIT.

—We make PROMPT SHIPMENT.—



Makes a good cut-off for Grain Elevators.

**IMPROVED
WIND-GATE**

SEND FOR PRICE-LIST AND DISCOUNT TO
MINER & PECK MFG. CO.,
NEW HAVEN, CONN.

HANDLE THE BEST:

**CHAMPION STOVE
CLAY**

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.



The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of $\frac{1}{4}$ inch cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.

It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

Sizes: 6, 7, 8, 8 $\frac{1}{2}$, 9, 10, 10 $\frac{1}{2}$, 11, 12, 12 $\frac{1}{2}$, 14 and 15.

NEW YORK: A. L. Canfield, 284-286 Pearl St.

CHICAGO: Excelsior Steel Furnace Co.

When in want of

Grates, Linings, Water Fronts

and other repairs for stoves and ranges

YOU CAN'T DO BETTER
than to send us your orders.

BEAR IN MIND

that we can furnish repairs for any of Barstow's and Spicer's Stoves promptly and at lowest prices.

SEND US A TRIAL ORDER, you will not regret it.

A. J. MAGOON & SON,

313 WEYBOSSET ST.,

Providence, R. I.

STOVE POKERS and LIFTERS.



"Siberian" Poker.

Either bent or straight ends; length, 20 in.

Arcade Plain Cast Lifter.

No. 3. Light pattern, coppered.
No. 4. Heavy pattern, coppered.

Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.

THE GEM Ball-Bearing Stove Casters

STRONG
AND
DURABLE



THE COMING
STOVE
TRUCKS

Try a Set and you will use no other

BEST PRICES AND DISCOUNTS ON APPLICATION

KRAMER BROS., MANUFACTURERS

Dayton Stove Repair Works

DAYTON, OHIO.

SELECTED MICA ONLY.

Prepared expressly for the Stove and Hardware Trade.

Two Grades: "North Carolina" and "Nevada."

PRICE LISTS AND DISCOUNTS SENT ON APPLICATION.

THE PALERMO MICA CO.,

115 Beekman St., New York.

MICA

Specially Prepared for the Stove Trade.

OHIO MICA CO., CANTON, OHIO.

FOR MICA

Sheet, out or uncut, Powdered and Flake,

WRITE TO

ASHEVILLE MICA CO.,
ASHEVILLE N. C.

— A COUNTRY paper says in an obituary: "Mr. X— was a good citizen. He lived uprightly; he died with perfect resignation. He had been recently married."—Exchange.

MICA

ASSORTED PACKAGES.

Put up expressly
for the Retail Trade.

ONE POUND—4 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$2.00	$4\frac{1}{2} \times 6$	$2\frac{3}{4} \times 8$
Wyoming	-	1.70	$2\frac{3}{4} \times 8\frac{1}{2}$	$2\frac{1}{4} \times 4\frac{1}{2}$

TWO POUND—8 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$3.75	2×3	$2\frac{3}{4} \times 4$
			2×4	$2\frac{3}{4} \times 8\frac{1}{2}$
Wyoming	-	3.20	3×3	$2\frac{3}{4} \times 4\frac{1}{2}$
			$3 \times 4\frac{1}{2}$	$4\frac{1}{2} \times 6\frac{1}{2}$

THREE POUND—12 SIZES $\frac{1}{4}$ lb. each size.

North Carolina	-	\$5.20	$4\frac{1}{2} \times 5$	$2\frac{3}{4} \times 4$
			$2\frac{3}{4} \times 4\frac{1}{2}$	$2\frac{3}{4} \times 8\frac{1}{2}$
			3×8	2×4
Wyoming	-	4.25	$2\frac{1}{4} \times 4\frac{1}{2}$	$2\frac{3}{4} \times 2\frac{3}{4}$
			$2\frac{3}{4} \times 3$	$2\frac{3}{4} \times 8\frac{1}{2}$
			2×8	$5 \times 6\frac{1}{2}$

ABOVE PRICES NET. NO DISCOUNT

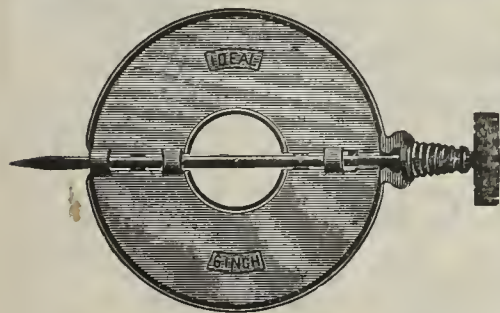
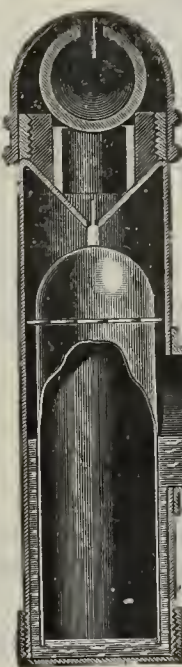
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NICKEL**ZUCKER & LEVETT
& LOEB CO.****PLATING**

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COMPANY**, Publishers and Booksellers. 232-238 William St., N. Y.**PIONEERS**LOW SPEED
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CYANIDE POTASH.
TURKISH EMERY.
POLISHING
MACHINERY.**THE HANSON & VAN WINKLE CO.****NEWARK****CHICAGO****NEW YORK****IDEAL DAMPERS,
COVER LIFTERS****AND POKERS**HAVE NON-HEATING
HANDLES OF ELEGANT
DESIGN AND FINISH.
THEY ARE THE BEST.**STOVER MFG. CO.**164 RIVER ST.,
FREEPORT, ILLS.**GALVANIZED
STEEL and
WOOD
TANKS.**All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.**Morgan's
20th Century
Air and Vacuum
Valve**Is a positive seal against air
returning to the radiator.
Check being perpetually bal-
anced in water
requires no
pressure to lift
it. A banked
fire, with
drafts closed,
will maintain
heat night and day in mild
weather. Will save four times
its cost in a single season.**MORGAN & CO.,**
40 Dearborn St.,
CHICAGO.**COLWELL LEAD CO.,**

63 Centre Street, New York.

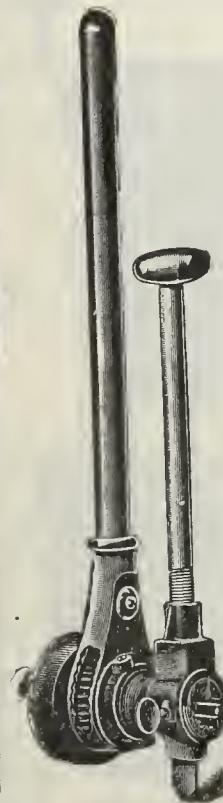
Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT

And Sellers of

Everything You Want for Plumbing.**Hand Elevators and
Dumbwaiters**made to be sold by the Hard-
ware trade. Can be placed in
position by any carpenter, Cat-
alogue free.**ENERGY ELEVATOR CO.,**

410 Cherry St., Phila., Pa.

**The Climax
RATCHET STOCK**Is an indispensable tool for
conveniently threading iron
pipe in ditches, under floors,
in corners, over head, etc.
With this tool threads can be
cut without removing whole
lengths of pipe. This tool is
provided with a strong vise
which securely grips the pipe
and by means of the leading
thread the die is forced on pipe
and the thread is cut. It is
made of malleable iron and
steel, and while light in weight,
making it convenient to carry,
is very strong and rigid. The
advantages of this tool make
it absolutely indispensable to
Plumbers, Steam and Gas Pipe
Fitters, Gas and Water Com-
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takes standard size dies, which
are extra if furnished.No. 1 threads $\frac{1}{4}$ to 1 in. pipe,
takes 2 or $2\frac{1}{2}$ in. die, \$10.00.No. 2 threads 1 to 2 in. pipe,
takes $2\frac{1}{2}$, 3 and 4 in. die, \$17.00.

For sale by leading jobbers.

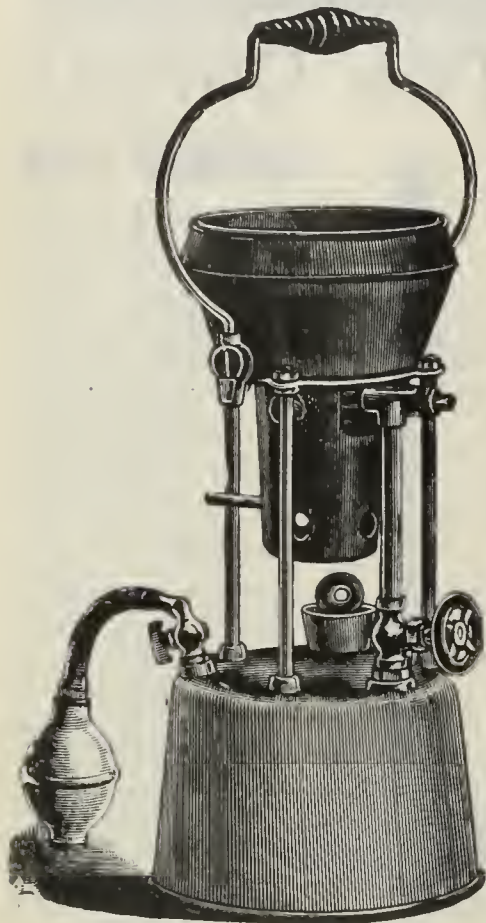
Manufactured Solely by

C. M. Kemp Mfg. Co.,
Baltimore.**Leather and Rubber
WASHERS,**Machine cut, at less price than can be cut by
hand. Send Sample for prices.**I. G. MARSTON & CO.,**
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L. WOLFF Manufacturing Company,

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93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,
The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases
6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coll Cup.

Wrought Steel Bottom.

Patent Wire Handle.

Improved Filling Plug.

Safety Air Cock Joints.

No Cast-Iron Parts.

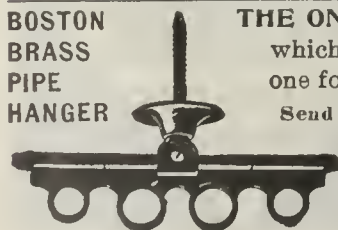
It weighs less than any other Furnace now in use.
In placing on the market

Our Improved Plumbers' Furnace
we have fully succeeded in producing *the best furnace made*. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent
upon application.

BOSTON
BRASS
PIPE
HANGER



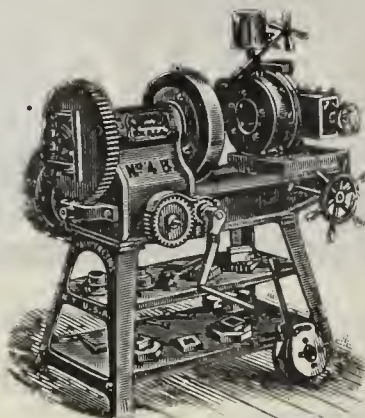
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which requires but
one form of holder
Send for Circular.

JOSEPH H.
YOUNG.
Boston, Mass.

D. SAUNDERS' SONS,

MANUFACTURERS OF

PIPE CUTTING AND THREADING MACHINES.



No. 4 B Machine, 1/4 to 4 inch.
Hand or Power.

All sizes 1/4 inch to 18 inch for Pipe Mill, Gas
and Steam Fitters' use. Tapping Ma-
chines for Steam-Fittings, also
Steam and Gasfitters' Hand Tools.

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FORBES PATENT DIE STOCK

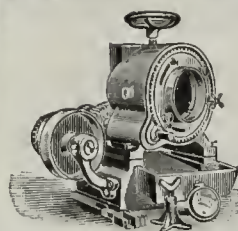
FOR HAND OR POWER.

Occupy less floor space, require less
power to run, more simple of construc-
tion, far cheaper than any other ma-
chine of same range.

Send for Illustrated Catalogue.

Manufactured by

THE CURTIS & CURTIS CO., 56 Garden Street,
BRIDGEPORT, CONN.



WE BUILD A SUPERIOR LINE

of PIPE THREADING,
and CUTTING OFF
MACHINES, (Hand or Power,) &
STOCKS, DIES and other Tools

For

WATER, STEAM and GAS FITTERS.

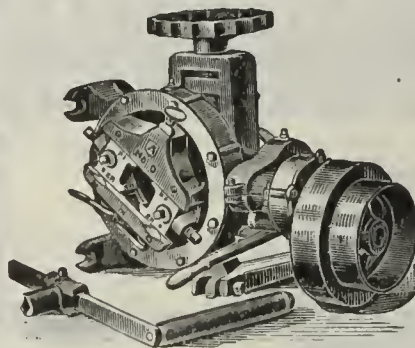
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THE ARMSTRONG MFG. CO.,

No. 0 Threading Machine, Power Attachment.

139 Centre St., New York.

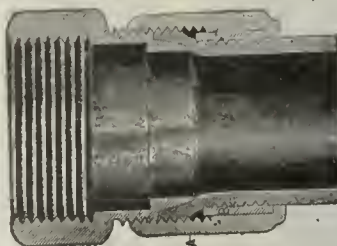
BRIDGEPORT, CONN.



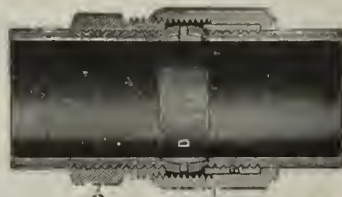
SOLDERLESS COUPLINGS

FOR

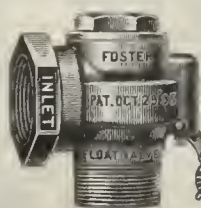
LEAD to LEAD and
LEAD to IRON PIPE.



Catalogue on
Application.



THE J. & E. STEVENS CO.,
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"F. W." FOSTER'S

High and Low
Pressure

NevRleK
Float Valve

Iron Pipe 1-2 inch to 6 inch
Inclusive.

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F. W. FOSTER MFG. CO.,
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ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers,
expansion tanks and boil-
ers with copper tube coils
inside for heating water
by steam.

L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.

"Simplex"

Patented
Stop and Waste Cock

Practical plumbers know how difficult it is to reverse any of the cocks hitherto made, because they are so complicated. The "Simplex" can be changed from right to left hand instantly, and CAN'T be set wrong. Interchangeable Lever, Tee Handle or Socket Head. To change from right to left or vice versa:—Take out set screw B. Reverse handle. Put set screw in hole C.

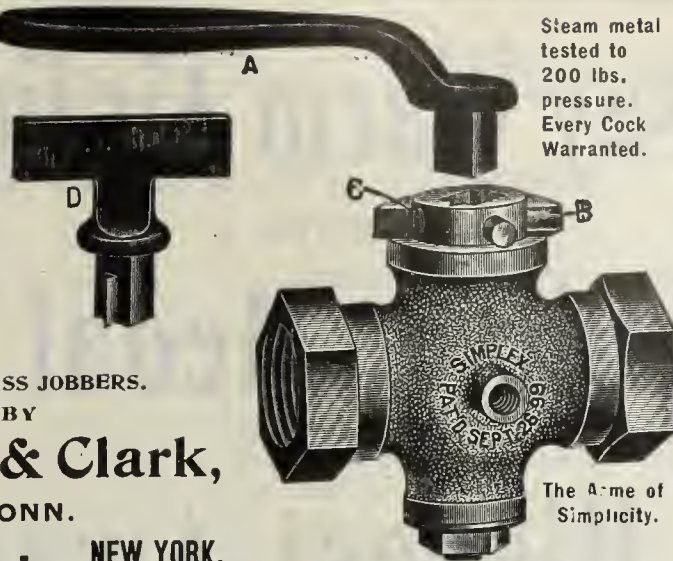
FOR SALE BY ALL FIRST-CLASS JOBBERS.

MANUFACTURED BY

Landers, Frary & Clark,

NEW BRITAIN, CONN.

Salesroom, 82 Chambers Street, - NEW YORK.



Steam metal
tested to
200 lbs.
pressure.
Every Cock
Warranted.

The A-cme of
Simplicity.

We Manufacture a
Large and Well
Assorted Line of

Compression Bibbs,
Basin and Bath Cocks,
Ground Key Lever Handle Bibbs,
Beer, Ale and Liquor Cocks,
Champagne Taps. Racking Cocks,
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Cocks,
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Kerosene Oil and Petroleum Fau-
cets.
Fairy Hose Nozzles, Crown Water
Filters, Towel Racks, Etc.

TIN LINED

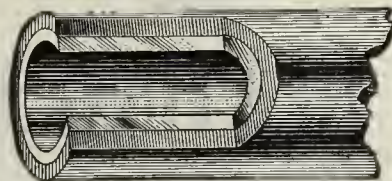
IRON PIPE.

For Pure Water.

Avoiding without extra expense all
danger of lead or brass poisoning.

LAMB & RITCHIE, Cambridge, Mass.

L. & R. PIPE.—Patented.



This lining cannot be torn from the
pipe even by bending or by hot water.

LEAD LINED

IRON PIPE.

Made the Same Way.

In Case of a Freeze Up

a No. 5 Fire Pot cannot be beat. By removing a spring key the top section can be removed, exposing an open fire which may be used as a torch for thawing frozen pipes, taking soil pipe apart, or in doing any work that a torch will do, and in addition you have a complete fire pot, enabling you to heat soldering coppers

and melt a kettle of metal at the same time. Our catalog tells all; it's free and is worth dollars to you. Jobbers sell at factory price, or we will ship direct if cash accompanies your order. *Your money back if not pleased.*

CLAYTON & LAMBERT MFG. CO.,
DETROIT, MICH., U. S. A.



\$4.50 Net.



**VANDERMAN'S
Adjustable Fitting**

FOR
Soil Pipe Connections.

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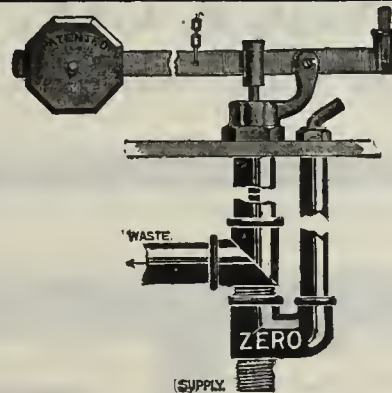
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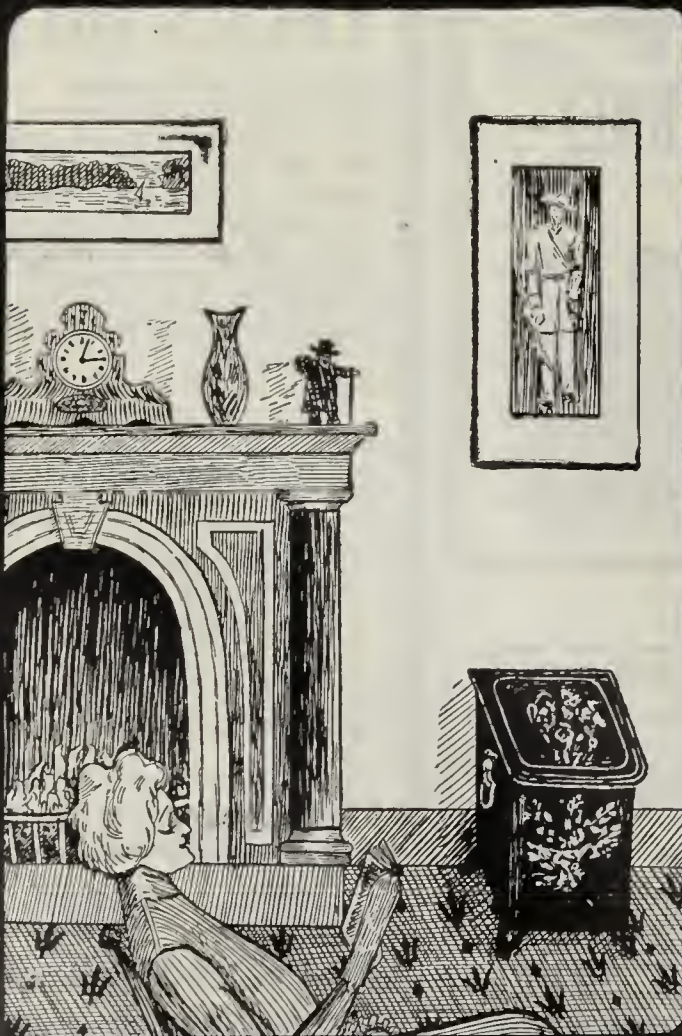
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The Texas Oil Product.

It seems that the owners of the oil wells in the Beaumont district of Texas are facing a serious problem in the marketing of their product. According to the latest statistics the total production of the various gushers in the Beaumont district approximates 1,500,000 barrels of oil a day, or over 500,000,000 barrels a year. This immense output largely exceeds the entire production of the rest of the world. The total production of petroleum in the United States since the first discovery in 1859, and down to the close of the year 1900 amounted to only 1,006,876,000 barrels, or about double the capacity of the Beaumont wells for one year. The entire oil production in the United States last year was about 60,000,000 barrels, or less than 200,000 barrels a day, which is only about one-seventh of the total production of the Beaumont fields at the present time. If, however, a report recently sent out from Beaumont, to the effect that at a test made a short time ago of crude petroleum obtained from the Spindle Top field it yielded at the refinery between 30 and 35 per cent. of illuminating oil, be accurate, then the problem of how to dispose of the large product of the Texas wells can be partially solved by the establishment of local refineries for the purpose of extracting the illuminating oil. There is practically an unlimited demand for illuminating oil, whereas that for crude petroleum is at present comparatively limited. At the same time if the experiments now being made in many quarters with crude petroleum for fuel purposes and improved apparatus for its use are satisfactory, they will undoubtedly lead to the adoption of oil fuel in many places as a substitute for coal or wood. Already a number of concerns are preparing to pipe oil from the Texas fields to New Orleans, Galveston and other ports. These pipe lines, when completed, would provide an outlet for a large amount of the refined product, which could be shipped in bulk from the Southern ports to foreign countries. By means of tank cars the oil also can be readily transported by rail to points in the West and South, where a large demand should be found for fuel oil in places where coal for manufacturing, power and heating purposes is a costly item of the expense account. It has seldom occurred in the history of any natural product that the supply so far exceeded the possible demand that new uses could not be found for it. And it is not likely that the production of the Texas oil wells will long be a drug on the market, particularly as cheap fuel is one of the things most loudly called for by the manufacturing interests of this and other industrial nations.

Securing Foreign Markets.

Although, according to official statistics, our exports have of late been making a new record, it is to be noted that the exportation of manufacturing merchandise shows something of a falling off in value, as compared with that of a year ago. One of the influences which has checked the foreign sale of American products is the heavy demand here, accompanied, as it has been in some lines, by higher prices. This condition has operated in two ways, as English and Continental competitors have been enabled, especially with their declining markets, to undersell the American manufacturers, while at the same time the urgent requirements of the home market have interfered with promptness in shipment to the foreign markets. The effect of the great steel strike in augmenting the force of both of these influences is obvious.

It is not improbable that American manufacturers are in a measure blameworthy for any actual or apparent falling off in the sale abroad of their products. There is a great temptation to attend to the home trade even to the neglect of a foreign trade beginning to assume large proportions, and thus preparing to justify in practical returns the labor and expense with which it has been brought to this point. The importance of steadily and consistently cultivating the foreign market while the merchants abroad are in a receptive humor cannot be too strongly impressed on manufacturers. While the bulk of their production is absorbed by domestic trade, it must not be forgotten that when the supply catches up with the demand here there will be a universal scramble for other markets. There is undoubtedly, on the part of foreign buyers, a disposition to cultivate this country as a source of supply, and our manufacturers are becoming more generally and favorably known to merchants all over the world, who previously looked to London, Paris, Berlin, Hamburg and other European centers for the supply of their wants.

While these favorable conditions continue there should therefore be an earnest and unremitting attention to the requirements of foreign customers, even to the temporary inconvenience of those at home, and at the same time a vigorous extension of foreign relations, which are sure to be of great value when the domestic demand relaxes. The wise manager will look beyond the present convenience and profit and establish his connections in advance. The opportunity is so full of promise that it should not be neglected.

Compulsory Arbitration.

Considerable interest has been shown the world over in the system of compulsory arbitration of labor disputes in vogue in New Zealand. It was believed in some quarters that the adoption of this system would furnish a satisfactory solution to the problem of the prevention of strikes and the adjustment of labor disputes. It seems, however, that the New Zealand system has not in all respects worked out to the satisfaction of either the employers or the employed. According to a statement made by J. Grattan Grey, a prominent New Zealander now in the United States, the system of compulsory arbitration as operating in his country is by no means

a success. In fact he says it has proved so ineffectual as to leave strong doubts as to the desirability of its continuance. The accusation is made that the members of the Board of Arbitration are in the habit of prolonging cases in order to secure the fees that are paid to them each day in which they are occupied thereon. Mr. Grey says further that the arbitrators encourage disputes, with the result of making capital timid and arresting the development of industrial enterprise. Of 90 cases brought before the Board of Arbitrators in the ten years, from 1890 to 1900, only 29 were settled. Thus it would seem that the enthusiastic reports of the beneficial effects of the compulsory arbitration system in New Zealand published from time to time should not be completely relied upon. New Zealand has for many years been held up as a criterion in labor matters. The workman there is in the ascendant, and her legislature is practically controlled by the labor vote. Yet the millennium of labor and capital still seems afar off, even from the point of view of the worker in that country.

In the report of the Industrial Commission on labor disputes and arbitration, just issued, the commission note a growing movement in favor of conciliation and arbitration between organizations of employers and employees in the United States. This system has been adopted in a number of single industries throughout the country or throughout sections where the conditions of business are generally similar. Systems of arbitration have been established on a national scale in the stove molding, general foundry, machinists' and printing trades. The report gives great credit to the State boards of arbitration, which are doing much toward furthering industrial peace. Representatives of employers and workmen, however, who testified before the commission almost uniformly opposed any system of compulsory arbitration. Several State boards of arbitration also have expressed their opinion against the adoption of the principle, although the New York, Indiana, Ohio and Illinois State laws provide for compulsion in certain cases, as where life and public welfare are in danger or great inconvenience or loss is entailed on the public, as in railroad strikes.

The Freight Car Shortage.

The steel furnaces and works in the Pittsburgh district, as well as those in other parts of the country, are suffering at the present time from a pronounced scarcity of coke, owing to the shortage of cars for the transportation of this fuel from the ovens. So serious is the scarcity in some parts that blast furnaces have been obliged to bank down for days at a time on account of lack of fuel. This tends to cut off a considerable production of pig iron and still further to reduce the available stocks, which are now none too large to meet the consumptive requirements of the country. The lack of freight cars is also being felt by manufacturing and commercial interests at large. It involves exasperating delays in the delivery of raw materials and also in the transportation of finished goods to their destinations. It is obvious that the equipment of the railroads is not equal to the heavy traffic which they are now being called upon to move. The shortage of the corn crop, which it was expected would cut down the business of Western railroads quite considerably, seems to have been more than made up by the record breaking movement of general merchandise. The railroad companies, while asserting that they are doing their very best to meet the requirements of their patrons, hold out no hope of relief from the present stringency for some time to come.

Anxious to Learn a Trade.

A man who has acquired the mastery of any trade has always been considered a valuable citizen of any country. In fact it has been pointed out that those nations are strongest which have the greatest number of skilled artisans. With such an idea prevailing and coming down for several generations it is not strange that many young men are eager to learn a trade, even if they find some difficulty in making a selection. Of late years the ambitions in this direction of young men in the United States have been very much discouraged by the difficulty of securing an opportunity to learn a trade and the conditions which they must meet when the opportunity is offered. In some of those trades in which our readers are interested considerable difficulty has arisen in the past few years over the question of taking on apprentices. Some men know that with the manner in which shops and business are conducted at the present time it is difficult to give to an apprentice the attention and instruction that he is entitled to when he is bound by his indenture to give his entire time to his employer. Conscientiousness on this point has caused many employers to refuse to take apprentices. Instead they have hired laborers to do the work which ordinarily falls to the apprentice during the early part of his apprenticeship. Restrictions have also been imposed in many of the trades as to the number of apprentices that shall be employed in a shop. Owing to these two conditions the field for recruiting skilled mechanics is becoming more and more circumscribed. It is this fact that caused a surprise to one of the judges in Newark, N. J., recently, when he received a note from two boys begging him to send them to the State's prison for two years rather than to a local penitentiary for a shorter term. On sending for these young men—who in all probability would never have been brought before him had they been honestly engaged in learning some trade—the Judge learned that the ground of their desire for a longer sentence at the State's prison was that it would afford them an opportunity to learn a trade. The Judge granted their request, expressing the hope that it would make better men of them. Both the prisoners thanked him.

Reports from various sections of the country indicate continued activity in the building trades, in some instances upon a scale which breaks all records for corresponding periods. The increase in the cost of building materials seems to offer little if any check to active operations, and it is probable that the volume of building for 1901 in the aggregate will exceed that of any recent year. Labor troubles are comparatively unimportant, and the outlook is for an amicable adjustment of difficulties where they now exist.

On December 1 the South Carolina Interstate and West Indian Exposition will open its doors in the city of Charleston, S. C., to remain open until June 1, 1902. The preparations for the exposition are reported to be well forward and great things are hoped for it by the promoters of the enterprise. The exhibits will cover the products of the entire South, the West Indies, Cuba, Porto Rico, the Philippines, Mexico and the South and Central American republics.

In an article on "The Lipton System of Business," published in a popular periodical, Sir Thomas Lipton gives his receipt for success in the following words: "Work hard; deal honestly; be enterprising; exercise careful judgment and advertise freely and judiciously." In following out these principles the noted Irishman has achieved a remarkable degree of prosperity. His maxims are worth remembering and adopting.

Warming a Chapter House.

There are several features in the system used for warming the Beta Theta Pi Chapter House in Syracuse, N. Y., that will interest furnacemen in a description of it. Those who are giving attention to this branch of heating may derive benefit from a study of the methods adopted for meeting the peculiar requirements presented and special interest will attach to the plant owing to the fact that it has undergone the only practical test—that of actual use through a winter—with entire satisfaction to all concerned.

In Fig. 1 is given a general view of the chapter house, which stands on the side of University Hill, Syracuse, N. Y. The building faces the east, with one side hav-

A No. 30 Kelsey warm air generator was selected for the work. Owing to the large number of heating pipes required in order that a separate and independent pipe could be provided for heating each room, the dome or bonnet of the generator was enlarged so as to provide sufficient space for connecting the 21 pipes used.



Warming a Chapter House.—Fig. 1.—View of House, Showing East Front and North Side.



Fig. 2.—View of Kelsey Generator, Showing Extended Dome and Air Supply Connection.

ing a full northern exposure, and the west end is open to the sweep of the wind. Owing to the building being used by 30 students, it was necessary to have each of the 21 rooms, as well as the halls, warmed to a com-

The construction of the dome is shown in Fig. 2, which gives a general view of the generator. The dome extends 7 inches beyond the line of the casing, and has the effect of providing a large warm air reservoir, which

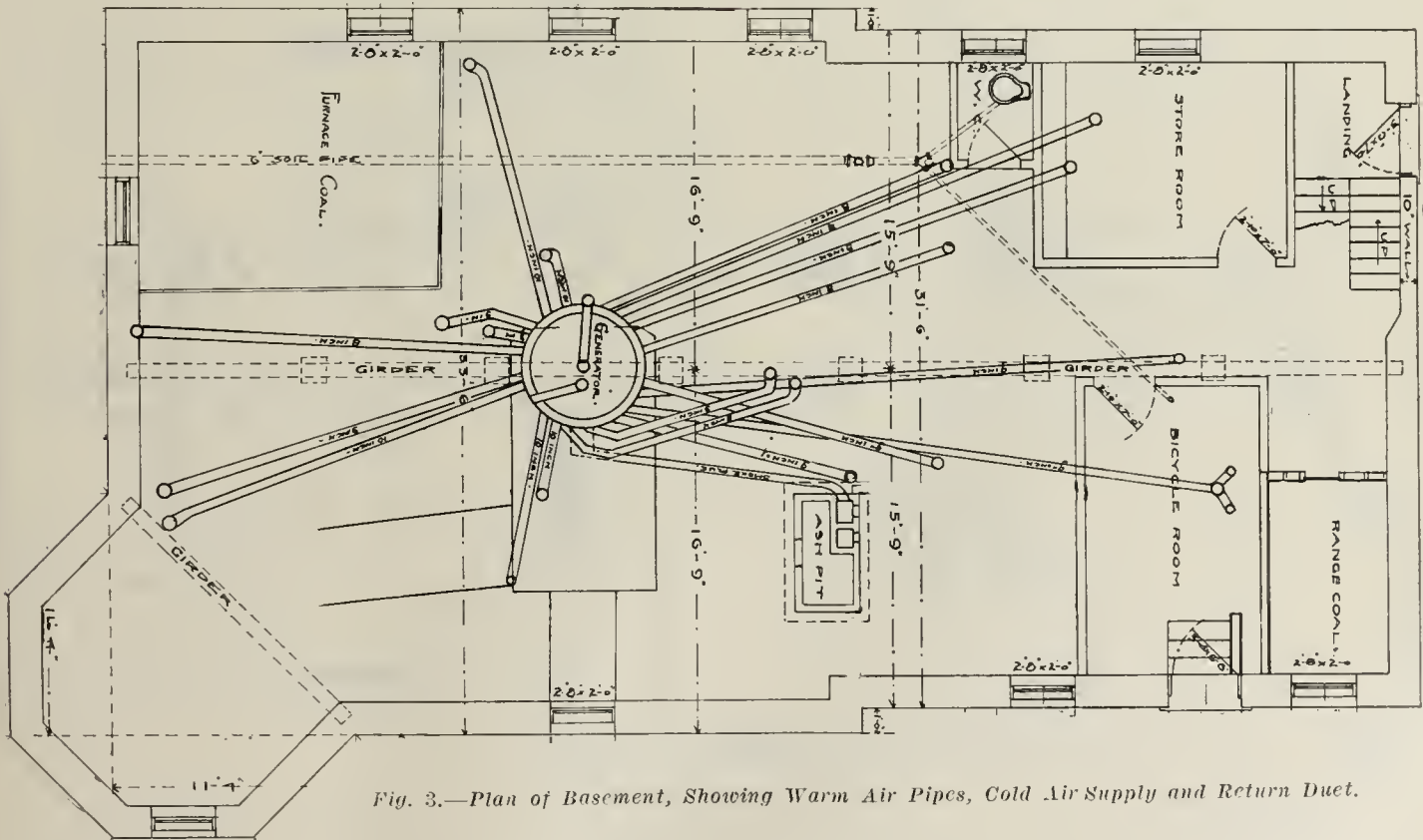


Fig. 3.—Plan of Basement, Showing Warm Air Pipes, Cold Air Supply and Return Duct.

fortable temperature, so that the occupants might use them for study at all times. These were the conditions which confronted the Kelsey Furnace Company of Syracuse, N. Y., who installed the plant, which was designed by Edward S. Berry, one of their heating engineers, under whose immediate supervision the work was done.

insures a steady flow of warm air to each of the pipes connected with it. The dome is not only lined on the inside with asbestos sheathing and tin plate, but the asbestos felt covering the warm air pipes also extends down over the dome below the upper casing ring. In this way the 21 hot air pipes connected with the furnace

are so arranged as to receive the proper supply of warm air.

The arrangement of the piping is shown in Fig. 3, which is a plan of the basement. It will be noticed that

way to the generator, where it changes to a 14 x 80 inch galvanized iron duct. This is 20 inches wider than the diameter of the generator and allows the duct to extend around toward the front of the generator on both

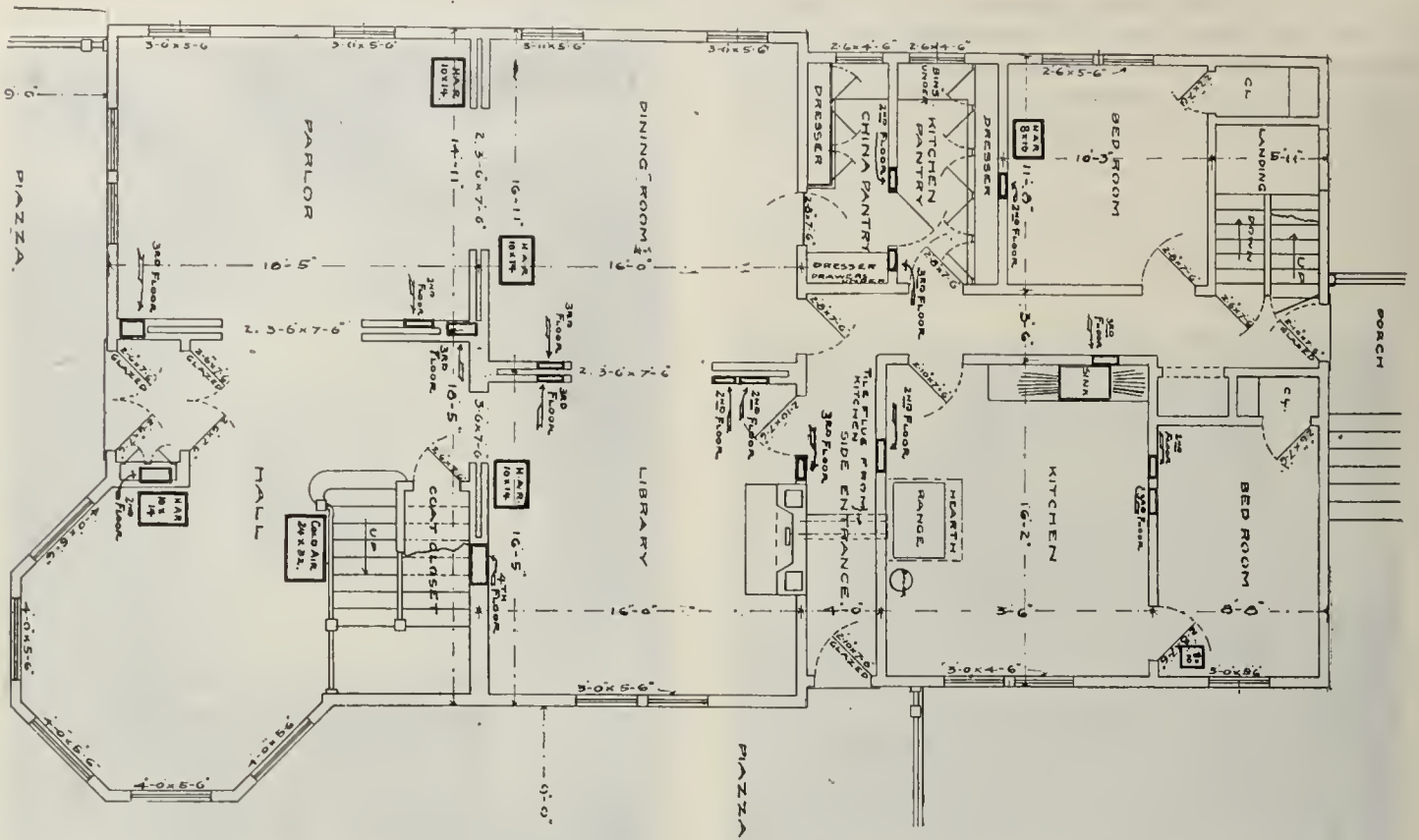


Fig. 4.—Plan of First Floor.

one pipe, which runs to the northwest end of the building, branches and connects with two risers for heating rooms on the second and third floors. Wherever a large number of pipes are supplied it is necessary to provide

sides to within 10 inches of the ash pit door frame. This method of connection is adopted so that an abundant supply of air can be furnished at the front portion of the generator.

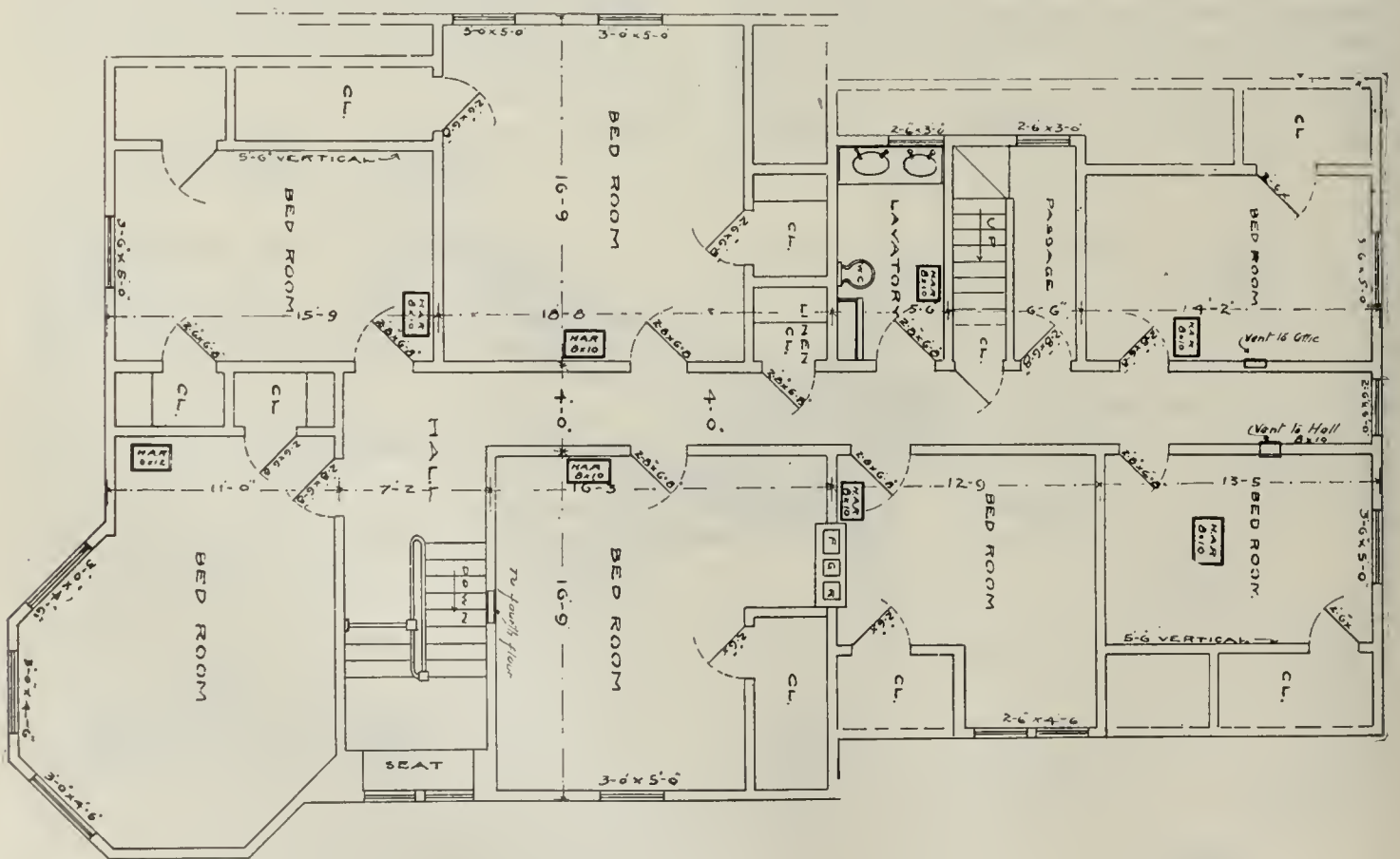


Fig. 5.—Plan of Second Floor.

for an ample supply of fresh air, and the method of connecting the air ducts with the furnace is shown in Fig. 3. The air is supplied from both out of doors and from a 24 x 32 inch register in the floor of the main hall. Fresh air is taken from a window on the west side of the building through a duct 24 x 32 inches in size part

While many furnaces have an air supply duct that is ample in area for the purpose the method of connecting it is such that the front portion of the apparatus is not properly supplied, and particularly when heating pipes are attached to the front of the apparatus. With the use of the extended dome, providing an air chamber

at the top, and the cold air supply delivering its fresh air evenly to all parts of the furnace, it is pointed out that the difficulty of filling all pipes equally has been satisfactorily overcome. In addition to the cold air duct from the outside a 14 x 34 inch exhaust duct made of

ting off the supply of outside air. The outside air is taken from under a large porch on the north side of the building, which prevents strong winds blowing into it and practically performs the same functions as a fresh air room in a cellar.

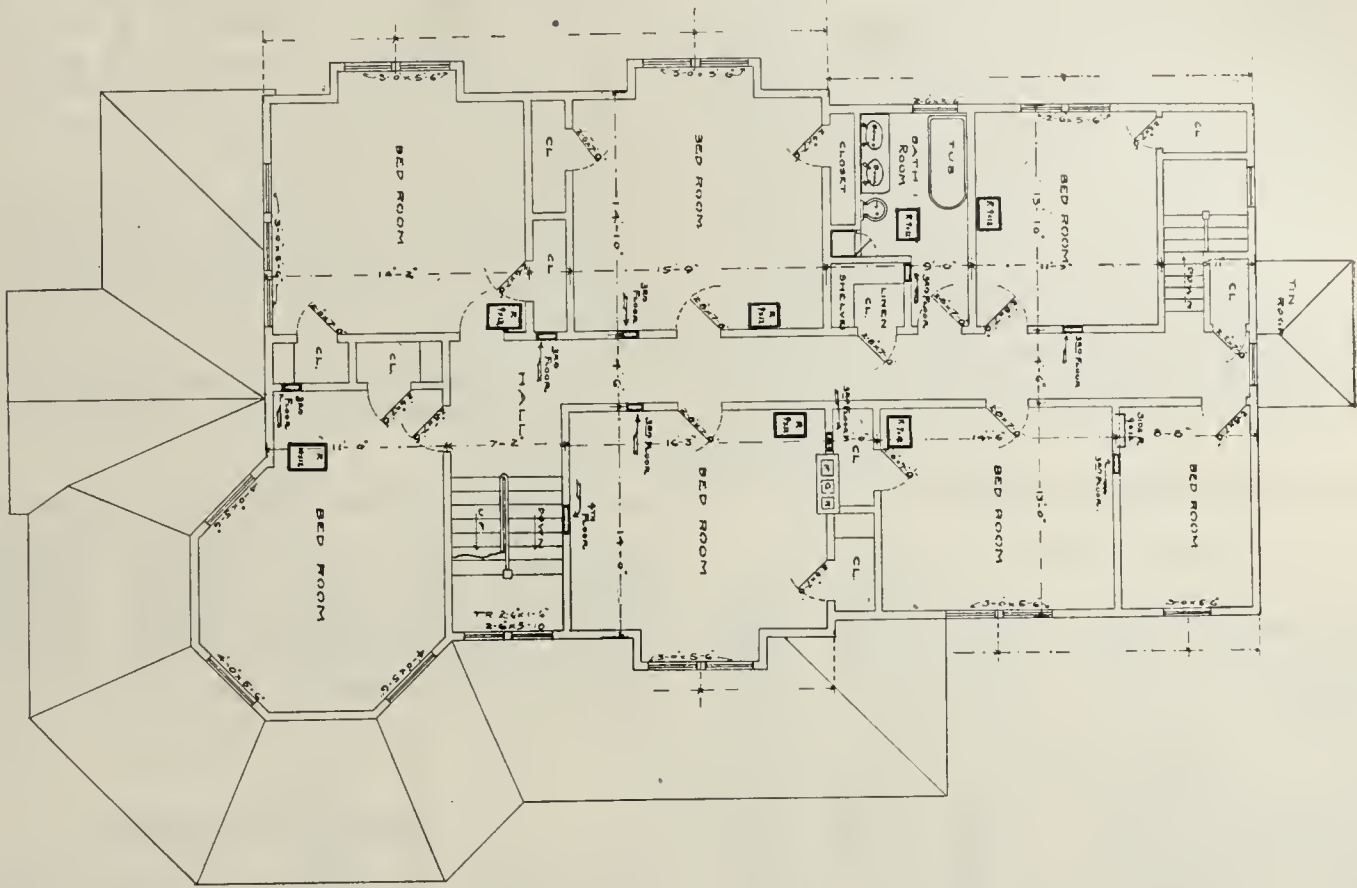


Fig. 6.—Plan of Third Floor.

wood is carried from the 24 x 32 inch cold air register located in the main hall. At a point where the exhaust duct connects with the main duct a partition is placed

The main hall of the building extends to the third floor, with all the rooms opening into it, and by exhausting the air through the large cold air register placed at

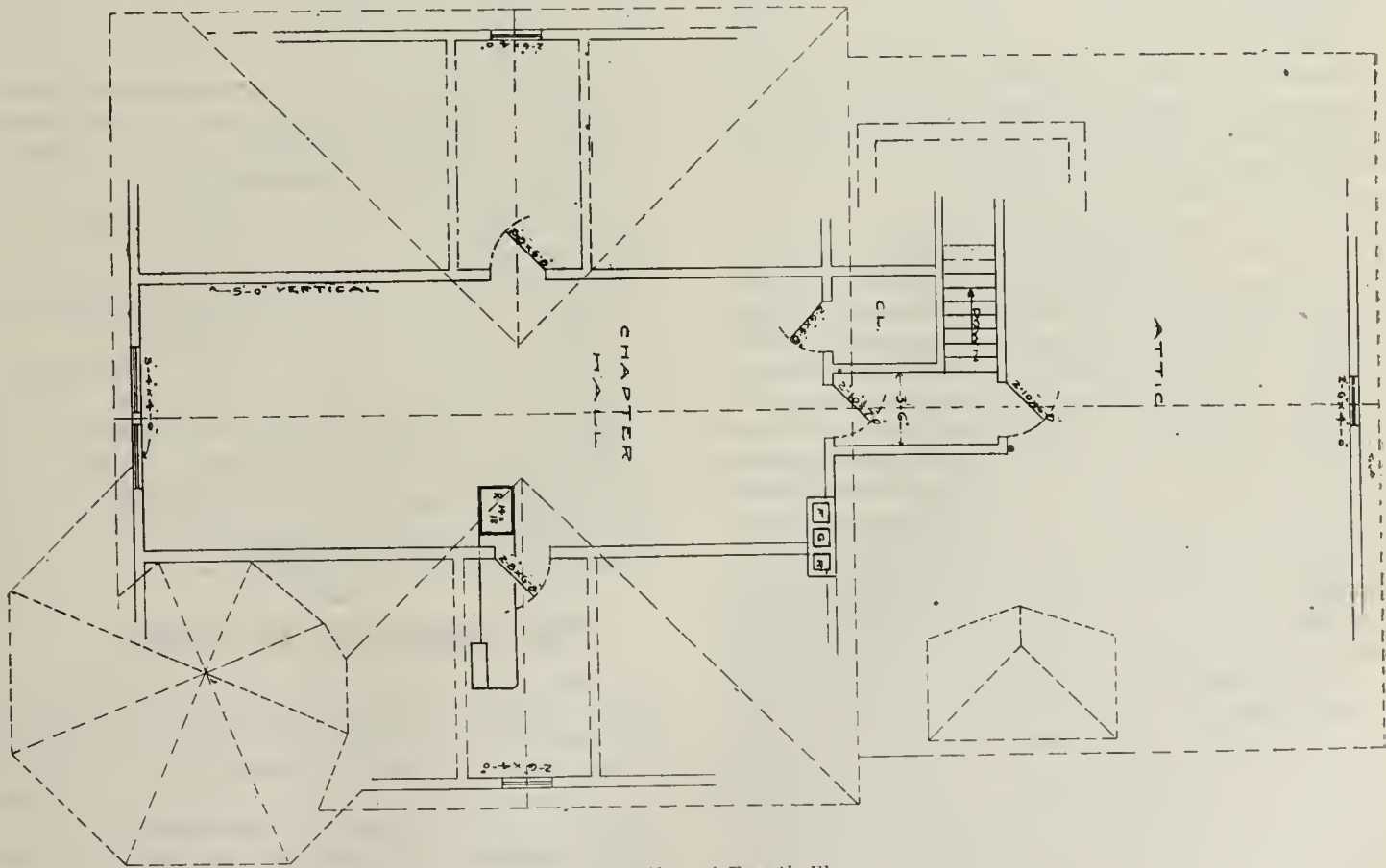


Fig. 7.—Plan of Fourth Floor.

in the main duct running all the way to the ash pit, entirely separating the inside and outside supply of air. The outside duct is provided with a slide located near the cellar window, in which there is a hole 9 inches in diameter, so as to prevent the possibility of entirely shut-

the foot of the stairs a good circulation of air throughout the house is secured. A plan of the first floor is given in Fig. 4, showing the location of the cold air register in the hall, the hot air registers in the floor and the hot air lines leading to the registers on the upper

floors. The plans of the second and third floors are given in Figs. 5 and 6, and a plan of the fourth floor in Fig. 7, the only portion of this floor that is heated being the chapter room. This room is heated by means of a 10-inch hot air pipe from the generator connected with a 6 x 14 inch flue running up in the partition to the fourth floor, where it is carried over and connected with a 14 x 18 inch register in the floor. In two of the west rooms on the third floor ventilator registers are placed in the side wall near the ceiling, one leading to the hall and the other leading to the attic. They are for the purpose of securing a circulation of air through them to assist in warming the rooms, owing to their western exposure.

To aid in the heating, and more particularly to effect positive ventilation, there is a large fire place in the library on the first floor. This fire place connects with a flue 8 x 12 inches, which has a terra cotta lining. A similar flue is provided for the furnace, and as the chimney is over 60 feet high a strong exhaust for ventilation and draft for the furnace is secured. The registers used are of a very open pattern made by the Tuttle & Bailey

the equivalent glass surface exposed in the rooms warmed. To aid in making a comparison the dimensions of the various parts are also given, as follows: The grate, being 30 inches in diameter, has an area of about 720 square inches, or 5 square feet. The heating surface exposed in the furnace is 191 square feet. The 21 hot air pipes supplied consist of nine 8-inch, seven 9-inch and five 10-inch pipes, with a combined area of 1281 square inches. The air supply consists of a 24 x 32 inch fresh air duct, having an area of 768 square inches, and a 14 x 34 inch exhaust duct from the main hall, having an area of 476 square inches. These connect into a 14 x 80 inch duct, having an area of 1120 square inches, which connects directly with the furnace. The space directly heated amounts to 47,519 cubic feet, and considering that 10 square feet of wall surface will lose as much heat as 1 square foot of glass surface, the space heated has an equivalent glass surface of something over 1150 square feet.

A very interesting piece of information in connection with the heating plant is the statement that about 20 tons

Table of Dimensions and Proportions.

Rooms heated.	Dimensions.	Cubic feet. space.	Square feet wall surface.	Square feet glass surface.	Square feet equivalent glass surface.	Hot air pipe diameter. Inches.	Hot air pipe area. Sq. in.	Hot air register. Inches.	Proportion of hot air pipe area to space heated. Sq. in. Cu. ft.	Proportion of hot air pipe area to equivalent glass surface. Sq. in. Sq. ft.
Parlor	18'5" x 14'11" x 10'	2,775	269	66	93	10	78	10 x 14	1 to 36	1 to 1.2
Hall—First floor.20' x 20' x 10'		4,000	378	82	120					
Second floor.		2,889	100	30	40	10	78	10 x 14	1 to 123	1 to 2.4
Third floor.		2,720	60	22	28					
Dining room.	16'11" x 16' x 10'	2,720	128	33	45	10	78	10 x 14	1 to 35	1 to 0.57
Library	16'5" x 16' x 10'	2,640	128	33	45	10	78	10 x 14	1 to 34	1 to 0.57
Bedroom	11'8" x 10'3" x 10'	1,204	70	33	39	8	50	8 x 10	1 to 24	1 to 0.8
Parlor bedroom.16'2" x 14'10" x 9'		2,160	249	66	91	9	63	9 x 12	1 to 34	1 to 1.4
Hall bedroom.	15' x 17' x 9'	2,295	249	66	91	9	63	10 x 12	1 to 36	1 to 1.4
D. R. bedroom.	15'9" x 15' x 9'	2,124	108	33	44	9	63	9 x 12	1 to 33	1 to 0.7
Library bedroom.16'3" x 14' x 9'		2,043	113	33	44	9	63	9 x 12	1 to 32	1 to 0.7
Bathroom	7' x 10' x 9'	630	54	9	14	8	50	9 x 12	1 to 12	1 to 0.3
Bedroom	13'10" x 11'3" x 9'	1,386	91	27	36	9	63	9 x 12	1 to 22	1 to 0.6
Kitchen bedroom.14'6" x 13' x 9'		1,696	107	33	44	9	63	9 x 12	1 to 27	1 to 0.7
Small bedroom.	13' x 8'8" x 9'	1,053	156	33	48	9	32	9 x 12	1 to 33	1 to 1.5
Parlor bedroom.10' x 15'9" x 8'		1,260	62	18	24	8	50	8 x 10	1 to 25	1 to 0.5
Hall bedroom.	15' x 17' x 8'	2,040	221	41	63	8	50	9 x 12	1 to 40	1 to 1.2
D. R. bedroom.	16' x 16'9" x 8'	2,144	98	30	40	8	50	8 x 10	1 to 42	1 to 0.8
Library bedroom.16'9" x 16'3" x 8'		2,176	115	15	26	8	50	8 x 10	1 to 43	1 to 0.5
Bathroom	5'6" x 10' x 8'	440	34	7	10	8	50	8 x 10	1 to 9	1 to 0.2
Back bedroom.	14' x 9' x 8'	1,008	54	18	23	8	50	8 x 10	1 to 20	1 to 0.5
Kitchen bedroom.12' x 16'9" x 8'		1,608	34	22	25	8	50	8 x 10	1 to 32	1 to 0.5
Small bedroom.	13'5" x 9' x 8'	972	54	18	23	8	32	8 x 10	1 to 30	1 to 0.7
Chapter hall.	13' x 34' x 8'	3,536	78	26	34	10	78	14 x 18	1 to 45	1 to 0.5
Totals.		47,519	2,980	794	1,150	21 pipes.	1,281			

Mfg. Company, New York. The warm air pipes, both in the partitions and in the cellar, are made of substantial material, and throughout their entire length are covered with heavy asbestos felt.

The Kelsey generator used for this work was the No. 30, which has a grate and fire pot 30 inches in diameter. The construction provides a large combustion chamber above the fire pot. It is formed of 16 oblong, triangular shaped cast iron flues leading from the grate line to the top of the radiator. The products of combustion rising from the fire leave the main chamber through interstices between the cast iron hot air flues and pass to the outer chamber, which consists of a steel plate drum reaching the full height of the radiator. On entering this chamber the heated gases are forced to take a downward turn and pass under a horizontal partition and around the rear to the final smoke outlet. By this construction the outer steel plate drum and the cast iron heating flues present a total hot surface of 191 square feet, with which the air must come in contact in passing through the furnace. It will be noted that the surface is so divided up that air cannot pass upward without either coming in contact with the surface or mingling with air that has been heated, so that it reaches the large hot air reservoir provided by the extended dome at the top at a temperature calculated to do efficient work when it reaches the registers through the insulated warm air pipes and risers.

In order that those who desire to consider or compare the proportions and dimensions of the details of the work, a table is presented which gives the dimensions of the rooms, the space heated, the wall, glass and equivalent glass surface exposed, the diameter and area of the hot air pipes, the sizes of the registers and the proportion of hot air pipe area to the space heated, and to

of coal were consumed during the winter. The proportions existing between these different parts of the heating system are given in the following table:

Proportions of Various Parts of Heating System.

Grate:

- 1 square inch to 66 cubic feet of space heated.
- 1 square inch to 1.6 square feet of equivalent glass surface.
- 1 square foot to 38 square feet of furnace heating surface.
- 1 square foot to 9504 cubic feet of space heated.
- 1 square foot to 230 square feet of equivalent glass surface.

Furnace heating surface:

- 1 square foot to 248 cubic feet of space heated.
- 1 square foot to 6 square feet of equivalent glass surface.

Hot air pipe area:

- 1 square inch to 37 cubic feet of space heated.
- 1 square inch to 0.9 square foot of equivalent glass surface.

Coal per season:

- 1 ton to 2375 cubic feet of space heated.
- 1 ton to 57½ square feet of equivalent glass surface.

The Chappell Hot Air Furnaces.

The New Century catalogue of the Chappell Hot Air Furnace Company of Morenci, Mich., presents a number of illustrations of the Chappell hot air furnace, designed for burning coal and wood. The construction of the furnace will be of interest to furnacemen, on account of its peculiar features. The fire box and combustion chamber are constructed with heavy corrugations so as to increase the heating surface with which the air must come in contact in passing through it. As the products of combustion rise in this chamber they enter a solid cast iron oval shaped radiator, and must make a complete circuit of the furnace before entering the diving flue, which connects with the final smoke outlet. The furnace is made in several styles—some with cast iron and

some with steel radiators. The Morenci City steel furnace is of similar design, but is constructed entirely of sheet steel. Furnacemen who are located in a country where wood is burned and who cater for the heating of schools, churches and large buildings will be interested in a study of this catalogue, which can be secured on application.

Death of a Pioneer Stove Maker.

Josiah M. Read of Everett, Mass., one of the pioneer stove manufacturers of Boston, died on November 6 at his home in Everett, aged 92 years. Mr. Read had been an invalid for several years, and death resulted from old age. He was born in Sandwich, N. H., and in 1839 went to Boston, where he began the manufacture and sale of stoves on Blackstone street, remaining there until 1888, when he retired from active business at the age of 80 years. Mr. Read was one of the first manufacturers of cooking ranges in the United States, but is better known to the trade through his many inventions pertaining to stove construction. The Read damper is used in many of the best ranges on the market. He was probably the first maker of stove and furnace poker, fire shovels, &c., for the trade. In the furnace poker iron pipe was used having suitable handles and prongs at the ends. He represented his district in the General Court of Massachusetts for three years, and was known for more than half a century as one of the progressive business men of Boston. He was an enthusiastic worker in the cause of temperance and was a deacon of the Congregational Church.

The Favorite Furnaces.

With a view to commanding the attention of those who may be interested in the purchase of heating apparatus, the Peck-Williamson Company, Cincinnati, Ohio, are sending to the trade two catalogues of their furnaces and heating and ventilating apparatus. One, devoted to the Favorite furnaces, opens with a page of special information for the trade, followed by information which will be of interest to the final purchaser. Common mistakes in furnace construction and setting are explained, and the points of difference between the construction of the Favorite furnace and others are enumerated. The illustrations show the Favorite furnace provided with a deep ash pit, in which is supported a labor saving, agitating grate, above which rises a porcupine fire pot designed to present a large heating surface and to prevent overheating. Above the fire pot is a radiator, constructed with a large central combustion dome, at the base of which are a series of flues leading to an annular drum, of which the products of combustion must make a complete circuit before they escape to the chimney.

Illustrations are also presented of the Favorite Under Feed furnace. This furnace has a hopper into which the fuel is placed, while a lever with a gearing at the bottom operates a piston which pushes forward and up through an opening in the center of the grate a new charge of fuel whenever the fire needs replenishing. The 500 Series Favorite is made with a steel combustion chamber and outer annular drum. The Favorite furnace is made with a tubular radiator. Two other styles of the Favorite furnace are furnished with a high radiator of cast iron, and a high radiator of steel respectively. The catalogue closes with cuts showing a twin furnace connection, the Gage water pan, which is used in connection with floor registers, the porcupine fire pot and the Favorite improved metal clothes dryer, for use in the laundry.

The second catalogue is suggestive of the material so largely used in furnace work, having a binding covered with bright tin foil. This catalogue shows the special furnace made by the company for church and school heating, adapted for use on a gravity system or in connection with fan blowers. Sectional pictures of parts of buildings are given to show the application. This catalogue furnishes useful information on school furnaces and the heating of school buildings.

A Gas Goods Catalogue.

We have received the annual catalogue of Fletcher, Russell & Co., Limited, of Warrington, England, consisting of 200 pages illustrated with half-tone engravings, some of the goods being printed in colors to illustrate the special majolica enamel finishes in which they can be furnished. The catalogue is devoted to gas fires, heating stoves, foot stoves, condensing stoves and greenhouse boilers, and gives useful information in reference to results obtained by means of radiant heat from different varieties of gas fires and the character of fires best adapted for the sick room and chambers. The first 40 pages are devoted to cast iron gas fires of various design, all with an open front, filled with fire clay fuel, which becomes incandescent in use, throwing out strong heat to the apartments in which they are used. In another section are shown stoves having sheet iron bodies and constructed with fines for presenting additional heating surface, or diffusing currents of warm air. Radiant or reflector stoves occupy another section of the catalogue and the last part is devoted to various lines of greenhouse boilers, designed to utilize the heat of the gases to the full extent before they escape.

The Charm Crawford Range.

J. Q. A. Butler is showing, at 115 Beekman street, New York, one of the Charm Crawford ranges, made by the Walker & Pratt Mfg. Company of Boston, Mass., which is attracting considerable attention, owing to the beauty of its design and finish, as well as on account of some of the constructive features. One positive advantage of the range is the ease with which the nickel plated parts can be detached from the range for repolishing the nickel or blacking the range. Instead of steel bands, which a foundry house must naturally purchase from some other plant, the edges are ornamented with nickel plated castings, which not only have a fine polished surface, but also afford an opportunity for ornamental design, adding to their beauty. The damper is unique, being arranged so as to give a direct draft for kindling a fire and an indirect draft for baking, as well as to check the draft so as to keep in the fire when the range is not in use. Another novel feature is the tin lining in the back of the oven, which not only retains the heat of the oven, but prevents the cold atmosphere from chilling the oven at the back. The tin plate reflects the heat, and also reflects the light so as to light up the oven when the oven door is open. These are only a few of the novelties which have made this range much talked of in the trade and attracted many visitors to inspect it.

ODD PLATES.

THE SHEFFIELD STOVE & FOUNDRY COMPANY, Sheffield, Ala., advise us that they have had during the whole year more business than they could handle. They kept only one salesman on the road, and he has been taken off for the past two months. Three years ago the company employed ten molders; now they have 35, and they expect to employ 50 next year.

F. O. Alsop, Syracuse, N. Y., who is well known to the Stove, Range and Furnace trade from his long connection with it, has associated himself with the Syracuse Heater Company, Syracuse, N. Y., as general sales agent for the Syracuse Hot Air Furnace, patented by Charles J. Howard, president of the company. Mr. Alsop will visit and correspond with the trade in the interest of the Syracuse Heater. This Furnace is of the return flue construction and presents a large amount of heating surface, on which is based the claim of the manufacturers for large capacity and economy.

It is stated that 1300 finished Stoves were shipped from the Lansdale, Pa., plant of the Abram Cox Stove Company the third week in October, which was a record breaker for the local foundry.

THE QUAKERTOWN STOVE COMPANY, Philadelphia, Pa., report a very large trade in all lines of heating goods, as well as in Ranges, &c. The company have had a particularly active demand for what they call

their "big little range," the Rex, which they have been unable to meet. The same thing is true of their various lines of Gas Heaters. The volume of business done by the concern is said to be well ahead of that of the same period of last year.

THE UNION STOVE REPAIR COMPANY, 2854 Archer avenue, Chicago, advise us that they are jobbing the Black Jack Paste Stove Polish, together with several other popular brands, and are in a position to supply the trade with any special brand of Stove Polish they desire. The company are also receiving a large measure of encouragement from the trade in general on their Original Stove Repairs.

THE COLE MFG. COMPANY, Stove founders, are about to begin the construction of a new building in connection with their plant at Thirty-fifth street and Western avenue, Chicago. The new building will be three stories in height and extend over an area of 150 x 50 feet. It will be of brick and stone.

At the assignee's sale of the real estate, foundry, buildings and patterns for stove making of the Schuylkill Valley Stove Works, at Spring City, Pa., on November 1, the property was bought by E. B. Colby of New York for \$17,100. The plant is soon to be put in operation, and it is reported that it will either be consolidated with or run in connection with one of the successful plants now being operated in the Schuylkill Valley.

GEORGE M. CLARK & Co., Chicago, are sending through the mails a new price-list of their Gasoline Stoves, taking effect November 1. The price-list is inclosed in a stiff red cover for sending through the mails. A feature of the folder is an excellent view of the company's exhibit of Jewel Stoves and Ranges, which won a gold medal at the Pan-American Exposition.

THE PEERLESS STOVE COMPANY of Chicago have decided to move their plant to South Milwaukee, Wis., and the work of new construction is now under way. It is stated that the company have been purchasing from the Stowell Foundry & Mfg. Company more than 500 tons of Castings, and it is to save freight on this amount of material that they have decided to remove to the source of this supply. The company have been giving employment to about 50 men, and it is stated that after the plant at South Milwaukee is completed the pay roll will be largely increased.

THE SUN STOVE MFG. COMPANY of Detroit, Mich., recently filed a certificate changing the name of the corporation to the Sun Stove Company and increasing the amount of capital stock from \$20,000 to \$40,000.

THE WEIR STOVE COMPANY of Taunton, Mass., have recently acquired the Daniel Sheehan estate on Fourth street, which adjoins their plant. We understand that the business of the company has increased to such an extent as to make additional facilities necessary.

THE recent death of Theophilus H. Smith removed one of the oldest residents of Chelsea, Mass. For many years he was identified with the Stove business in Boston and was well known to the trade throughout the country. Mr. Smith was born in Berkshire, Vt., 84 years ago and went to Boston as a young man. He first engaged in a lathing business, but about 40 years ago he left that to engage in the Stove business. During his career he was connected with the Walker & Pratt Mfg. Company, and later with the Magee Furnace Company. He retired from active business about 15 years ago.

In a green envelope bearing their owl trade-mark, "Be Wise," the Gobeille Pattern Company, Cleveland, Ohio, are sending out a green circular entitled "Artistic Stove Patterns." The circular states that the company are busy with a line of Patterns for a new stove concern, and call attention to the success of the new Stove Patterns they made for the Summit Foundry Company of Geneva, N. Y., and to the fact that the Prizer-Painter Stove Company of Reading, Pa., took enough orders for their new Oak Stove to reimburse them for the \$20,000 order given in one afternoon to the Gobeille Pattern Company for new wood Patterns.

THE HARRIS ACETYLENE STOVE COMPANY, with main office in the Corporation Trust Company Building, Jersey City, N. J., have been incorporated with a capital stock of \$100,000 by John Harris, S. H. Smart and John H. Smart, to manufacture Acetylene Gas Stoves.

THE GATE CITY STOVE WORKS of Catlettsburg, Ky., have been incorporated with a capital stock of \$2000 by J. P. McCloskey, C. F. Wilson and others.

HARRY KING, who is well known to the Stove and Furnace trade, is now filling a responsible position with the American Tobacco Company.

Settlement of Labor Disputes in France.

A report to the State Department from United States Consul Skinner at Marseilles gives some details of interest regarding an organization established in that city by the French Government for the adjudication of disputes between employers and employees. The undertaking appears to be to some extent tentative in its nature. The mission of the new Council of Labor is to give advice upon all questions bearing upon labor; to prepare reports at the request of the Minister of Commerce and Industry; to publish the current and normal rate of wages; to determine the current and normal length of the work day; to seek means of preventing or terminating strikes or lockouts; to prepare reports upon the division of allowances made by the public to institutions of patrons and employees; to investigate and report upon the execution of laws, decrees and orders concerning labor and modifications which might prove beneficial thereto. For the present the Council is only granted advisory powers, the right of ultimate settlement still being left to the established authorities; but the idea is to enlarge its functions in the future.

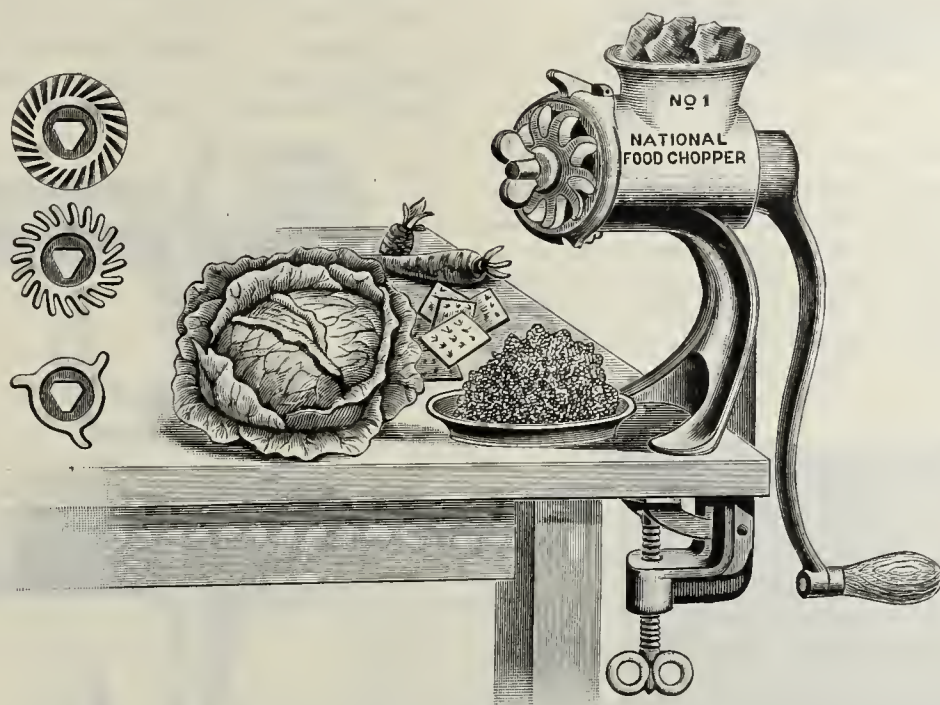
The Council is formed of three elements—employers, employees and *Prudhommes*, the latter class being members of the *Conseil des Prudhommes*, which has had an uninterrupted existence in Marseilles since the period of the Roman occupation. This body has for its duty the conciliation of differences between employers and workmen. It judges all complaints relative to contracts with apprentices, and in default of express stipulation regulates the amount of indemnity due in case of violation of such contracts. Complaints relative to the accounts of employees, trade-marks and patents are also considered by this court. The *Conseil* is composed of employers and workmen in equal numbers, with a president and vice-president, the members thereof being elected by their fellow employers and employees. The parties to complaints presented to the *Conseil des Prudhommes* plead themselves, without the intervention of attorneys.

In the Council of Labor organized in Marseilles the board of *Prudhommes* is represented, but the majority are members elected from the various syndicates of employers and workmen. The syndicates of employers must have at least ten members to cast one vote, and these syndicates elect employing councilors. Syndicates of employees must have at least 25 members to have one vote in selecting employee councilors.

One of the most ludicrous mistakes made by the telegraph was caused by the loss of a single dot in a telegram from Brisbane, Australia, to a London news agency, says the *Telegraph Age*. As it reached London it read: "Governor-General twins first son," which the news agency "edited" and sent around to the papers in the following form: "Lady Kennedy, the wife of Sir Arthur Kennedy, Governor-General of Queensland, yesterday gave birth at Government House, Brisbane, to twins, the first born being a son." The telegram arriving in the small hours of the morning, there was no time to check it or refer to Debrett, and it was published by most of the newspapers in London and the provinces and caused an unexpected sensation. Sir Arthur's friends pointed out with conclusive force that some one had blundered, as there never was a Lady Kennedy, Sir Arthur being a bachelor. The repeat message, which followed, read: "Governor-General turns first sod," referring to a railway ceremony.

National Meat and Food Chopper.

The National Specialty Company, Philadelphia, Pa., for whom Warner & Rucker, 88 Chambers street, are the New York representatives, have just put on the market the National meat and food chopper, as here illustrated. It is made in sizes Nos. 1, 2 and 3. The No. 1 is the popular size for family use, No. 2 being somewhat



National Meat and Food Chopper.

larger and of the same general style, while No. 3 is equipped with legs so that it can be screwed to bench or table, for the use of butchers, clubs, hotels, restaurants, &c. This chopper has four separate cutters for pulverizing and chopping various food products, cutting meat, &c., coarse, medium or fine, according to the nature of the material treated. The manufacturers dwell particularly on the simplicity of this chopper and the ease with which it can be cleansed after use. The worm screw spindle which forces the material against the knife is fastened to the handle with a recessed screw. The thumb screw at the left, which holds the knife in position, works against an end piece which has a bayonet catch top and bottom, and is held in place by a hinged piece of metal, that holds it securely in position. The curve of the standard enables a vessel for receiving the material cut to be pushed well under the delivery point. Attention is also called to the improved clamping device. The whole machine is covered with a coating of pure tin.

Oil Lamps and Heaters.

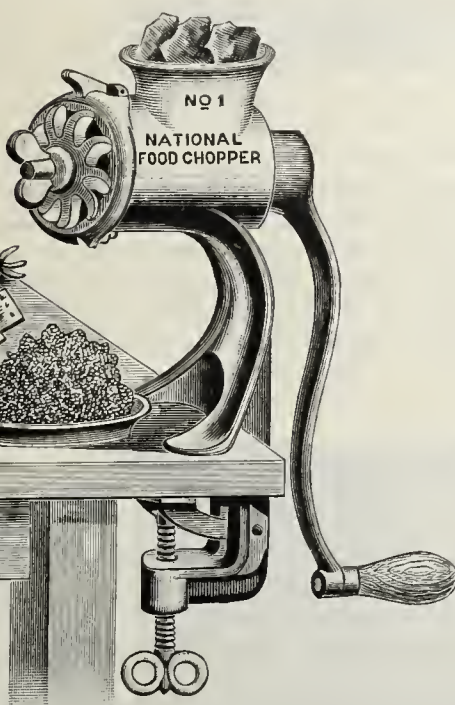
Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, have now on exhibition for this season's trade a large line of especially fine new lamps for exacting city trade, which must be seen to be appreciated. Some are in patina or old brass, others in carmine red with old brass trimmings, still others being in Nubian finish with similar trimmings.

In more moderate priced goods are shown table lamps with vase in old brass and trimmings of wrought iron. There are likewise several new lines of reception lamps in a number of new finishes in shaded tints so priced as to meet a popular demand.

In the construction of their line of oil heaters, they have incorporated the simple wicking device brought out recently in the Ideal student lamp. This recent improvement, they believe, will surely overcome any possible objection to oil heaters. There are other improvements in connection with these goods, however, one of which is that the bases are now stamped from steel instead of being cast iron, the effect of which is to remove the danger of breakage as well as to reduce the weight, which is especially important in shipping abroad.

The Schroeder Rotary Washing Machine.

The rotary washer herewith shown is offered by the Benbow-Brammer Mfg. Company, St. Louis, Mo. The tub of the machine is made of red Louisiana cypress. All iron parts coming in contact with the clothes are galvanized, while the castings are handsomely finished in colors. It is referred to as having a tight fitting lid,



allowing no steam to escape; also as running forward or backward easily. The working parts are always in gear. It is remarked, and there is no sudden jar in reversing. There is an absence, it is stated, of clutches, springs, triggers or other devices which might break or get out

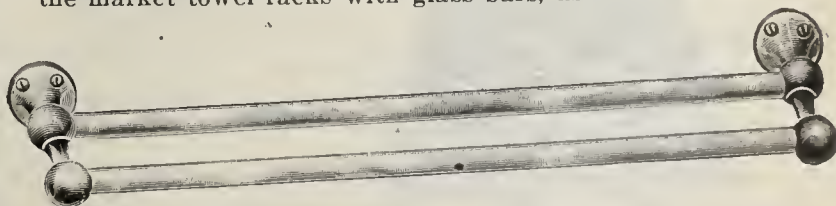


The Schroeder Rotary Washing Machine.

of adjustment. The washer is made in several styles of tubs.

Nickel Plated Towel Racks with Glass Bars.

Searls Mfg. Company, Newark, N. J., are putting on the market towel racks with glass bars, as shown here-



Nickel Plated Towel Racks with Glass Bars.

with. The width from the wall is 5½ inches. The racks are made in two sizes of bars—¾ and 1 inch—in both 24 and 30 inch lengths.

The Pullman Trouser or Skirt Hanger.

In the accompanying cuts are shown a trouser or skirt hanger offered by the Pullman Sash Balance Company, Rochester, N. Y. The hanger shown in Fig. 1 holds four garments; a smaller size is also made. They



Fig. 1.—The Pullman Trouser or Skirt Hanger.

are constructed of one piece of wire, nickel plated, and may be secured rigidly to a door or wall, or if preferred, hung on a hook. As shown in Fig. 2, the garment is suspended between two of the wires, and may be placed in position with one hand. Skirts are hung by the band. Either size hanger can be carried in a suit case or bag when traveling, and thus be always ready for use. The hangers are designed to carry the heaviest garments. The manufacturers mention the following points of ex-

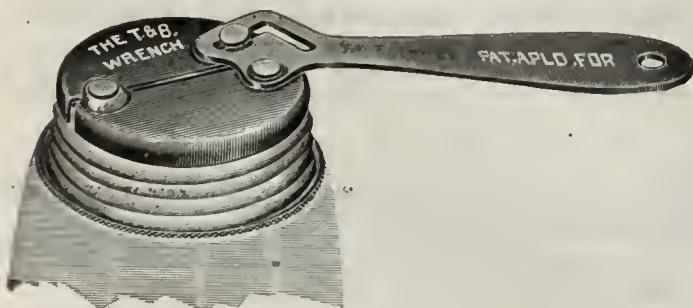


Fig. 2.—Trouser or Skirt Hanger in Use.

cellence: That the hanger takes the bag out of the knees of trousers and puts in just the right amount of crease; that skirts can be held without wrinkling, as the weight is evenly divided on the band; that the hanger saves room in wardrobes and closets; that it teaches method and economy, and that it will last a lifetime.

The T. & B. Fruit Jar Wrench.

The accompanying cut represents a fruit jar wrench offered by the Tarbox & Bogart Mfg. Company, Cleveland, Ohio. The wrench is stamped from sheet steel to render it unbreakable. It will fit any Mason jar cover.

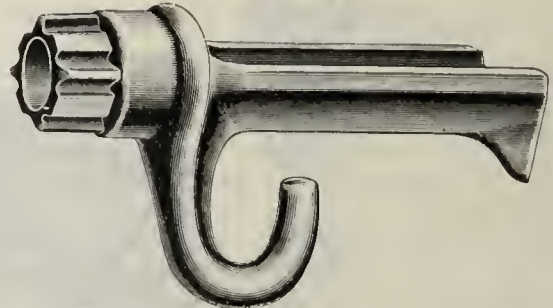


The T. & B. Fruit Jar Wrench.

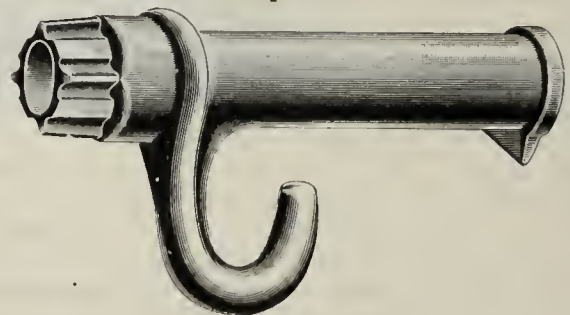
By the use of the wrench jars can be made air tight, it is explained, and the most obstinate cover can be easily removed with it, without injuring the cover in any way.

The Ideal Sap Spouts.

Charles Millar & Son Company, Utica, N. Y., are offering the sap spouts herewith shown, in open and closed top. They are made in one piece from the best malleable iron, tinned. Each kind is made to fit a hole bored with a 1/2-inch bit. The hook is combined with the spout, and the fluted or corrugated end is designed to admit the sap from all points. The spouts are made extra long so that all of the sap will drop into the bucket, and if necessary two spouts can be used with one bucket. Among the points of excellence claimed for the spouts are the following: That they will not break, that they



Open.



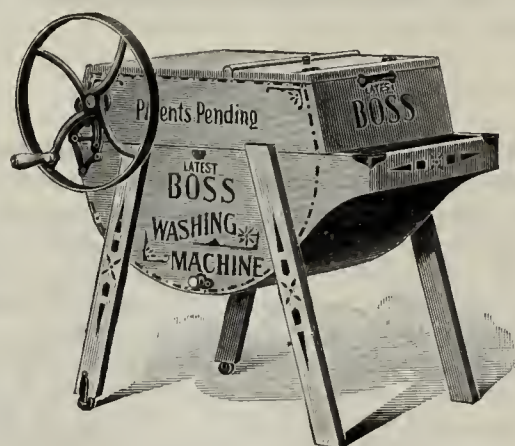
Closed.

The Ideal Sap Spout.

are not liable to clog, that they will thaw out quickly when slightly frozen, that they will obtain a comparatively large quantity of sap from a tree, that they will not injure trees and that they will not drop out or loosen by frost. Both kinds are referred to as being handsomely finished, and are packed in pasteboard boxes containing 250 spouts in all of either kind.

The Boss Internal Gear Washing Machine.

The improved washing machine herewith illustrated is offered by the Boss Washing Machine Company, Cincinnati, Ohio. The improvements embodied are increased leverage, decrease in amount of power necessary to operate it, increased rapidity and no openings for escape of steam. All gearing is inside of the casing



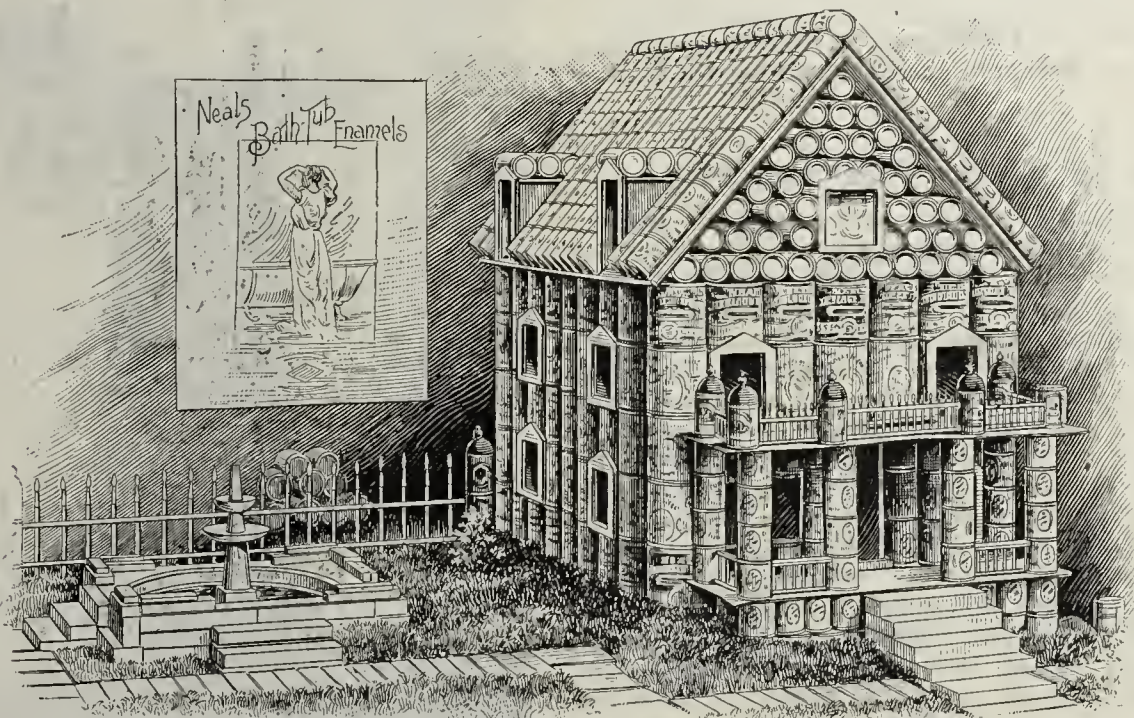
The Boss Internal Gear Washing Machine.

and out of sight. All castings, the fly wheel excepted, are heavily galvanized to prevent rust. It is stated that the castings cannot be broken by ordinary use, in handling or in shipping. All wooden parts are made of Louisiana red cypress, which, it is remarked, is impervious to water. The lower cylinder can be detached instantly from the connecting rod and removed from the machine, allowing the body of the machine after washing to receive thorough cleansing and ventilation. Every

machine is set up complete at the factory, all that is necessary being to attach the fly wheel to the shaft. The makers claim that the machine does the work thoroughly, quickly and with little power, that a child can easily operate it and that it cannot tear the clothes. The machine is made in three sizes—No. 7, for family use; No. 8, for family use, extra large, and No. 9, for hotel and laundry use.

A Paint Display.

Ready Mixed Paints are generally considered hard subjects with which to make pleasing window displays, but Burhans & Black Company, Syracuse, N. Y., have succeeded in producing a most attractive window with them, as is shown in the accompanying illustration. As will be seen, this display was made wholly of cans of Paint of various sizes, together with the material that is used in applying the same, with the exception of the stone steps and the work which represented stone around the fountain, which were made of Washita and other Carpenters' Stones. The spindle work on the bal-



A Paint Display.

cony, as well as the fence at the rear of the fountain, were made up from Brushes of various sizes.

Stove and Hardware Dealers.

THE next annual meeting of the Wisconsin Retail Hardware Association will be held in Milwaukee on the first Wednesday and Thursday of February, 1902. C. A. Peck, Berlin, the efficient secretary of the association, advises us that the association is actively prosecuting its work for the betterment of trade conditions. With very few exceptions the members are paying up their dues, and a keen interest in the association work is manifested. The organization is stronger than ever before, and the next meeting will, it is hoped, show a substantial growth during the past year.

WATT-HARLEY-HOLMES COMPANY, Fitzgerald, Ga., have opened a branch house in Douglas, Ga., and request the trade to send them catalogues relating to Hardware, Stoves, Paints and Sporting Goods, Tinware and Crockery.

J. H. COXHEAD of 851 Ellicot square is designing the new plant for Sidney Shepard & Co. of Buffalo, N. Y. The new plant will be located in the outskirts of Buffalo. Heavy orders for machine tools, presses and special machinery will be placed.

BOHART-MORRIS HARDWARE COMPANY, Harrison, Ark., wholesalers and retailers of Shelf and Heavy Hardware, Stoves, Tinware, Buggies, Wagons, &c., have re-

cently completed a new building. It is of pressed brick, two stories high, and 25 feet wide by 100 feet long. The store is referred to as one of the most attractive in the State.

Russia's Traveling Army Kitchen.

In his report on the Russian troops in China, says the New York Sun, Major Craighill of our army commented chiefly on the "traveling field kitchen," in which the men's soup was cooked while they were marching. This kitchen consisted of a boiler mounted on a special wagon. In traveling by rail, the whole apparatus was put on a flat car, and the cooking was done while the train was in motion. The same wagon seems to have caught the attention of a spectator at the recent Russian maneuvers, who describes it thus:

A large iron vessel, shaped rather like an enormous tea cup, is set upon the axle of a light wagon. In some forms the wagon is limbered like a gun, the limber and driver's seat being hollow to carry supplies. The top of the vessel is covered with a double hinged lid, and is fastened down with screws, and provided with a safety

valve. Below this large boiler an iron fire place is constructed, the door facing to the rear of the carriage, while a chimney 2 or 3 feet high carries off the smoke and insures a draft.

Before the troops move off the men in charge of these wagons fill the boilers with water and put in meat and vegetables. About two hours before camp is reached the fires are lighted, and the dinner begins to boil, so that by the time the troops come to a halt a hot dinner of strong soup and boiled meat is already cooked.

It is true that the use of the kitchen wagon entails a slight increase in the baggage train; but this increase is counterbalanced by the independence which each company possesses if it carries its kitchen, larder and wood store in one light cart. The amount of wood required is far less in an iron grate than in an open or trenched fire. The wagon is inexpensive, but the saving to the men would outweigh a far more expensive contrivance. It is superior to any article of camp equipment now in use in the armies of Europe.

The commissariat of the Russian army is different from ours, in that canned food is practically not used at all. But the commendation given by competent military men to the Russian field kitchen suggests that it might be studied by our military experts with advantage.

Pullman car porters are organizing a bank in Chicago. This will be the second bank in the North to be founded by colored men, the first being now in active operation in Philadelphia. The porters maintain an organization named the United Investment Company, who are operating two business ventures in Chicago, one a furnishing store and the other a cigar store and factory.

The St. Louis Exposition.

The buildings of the Louisiana Purchase Exposition, which will be held in the city of St. Louis in 1903, will occupy a site embracing the unfinished half of Forest Park, said to be one of the largest public parks in the world. The portion to be used contains 668 acres, and about 300 acres of surrounding property will be added so as to bring the total area of the site up to about 1000 acres. The main buildings will be larger, it is stated, than those of any previous exposition, and it is expected that the working drawings will be ready by November 1. The letting of contracts aggregating about \$11,000,000 for construction work on the buildings and grounds will begin about December 1. There is to be an agricultural building, 700 x 2000 feet; a manufactures building, 600 x 600 feet; a liberal arts building, 600 x 1200 feet; a social economy building, 550 x 700 feet; a transportation building, 600 x 1200 feet; an education building, 550 x 700 feet; an art building, 300 x 600 feet, with two wings, each 200 x 300 feet; a mines and metallurgy building, 600 x 1200 feet; an electricity building, 600 x 550 feet; and a Government building to cover 100,000 square feet. The estimated cost of these buildings is \$7,000,000. To these will probably be added buildings for fish and fisheries, for machinery, for forestry and for horticulture.

Severe Test of Fire Proof Construction.

There have been several cases recently in the city of Chicago where fire proof construction has been subjected to very severe tests. Probably one of the most severe was in the eight-story building fronting 180 feet on Market street and 140 feet on Lake street, which was erected about two years ago, and was occupied by a firm of wholesale grocers. The fire originated about midnight by some unknown means in the southeast corner of the first floor in some waste or rubbish which had been swept to that place to be hauled away in the morning. The fire penetrated to a mezzanine story above 23 feet wide and 125 feet long, which was closely packed with wooden ware, including buckets, baskets, tubs and other light articles. These with several hundred barrels of sugar beneath were consumed. Experts estimate that at times there were 2000 degrees of heat at one place, yet notwithstanding the conditions the fire was under control in half an hour. The firemen expressed the opinion that had the building not been of fire proof construction the entire structure and contents would have been destroyed.

The building was designed and erected under the supervision of architects D. H. Burnham & Co. of Chicago, who describe the construction as follows: The foundations of the east wall of the building were built on what is known as the cantilever system, resting on piles. The columns supporting the mezzanine story, which was 7 feet 3 inches in the clear, were of heavy cast iron and were bricked in square. The beams were of cast steel, having a segmental arch of hollow tile fire proofing. The arches were supported by skewbacks, which protected the lower flange of the beam. The floors were of two thicknesses of wood laid in concrete on wooden sleepers. The south end of the mezzanine story was composed of large wire glass transom lights 6 feet tall and the full width. Piled up against these transoms was the burning merchandise, but it is stated that the glass was only cracked.

The loss was adjusted on a basis of \$31,536, and of that amount only \$3869.34 was set aside as the damage to the building. Much of the damage represented by this amount, however, was done by smoke, and by the firemen in getting into the building, as well as in the cleaning up and putting other than the burned section into good condition. Superintendent Tinsley of the firm of architects estimates the value of that part of the building which was really destroyed at \$200, the rest of the loss being attributable to the causes indicated.

In the opinion of insurance men, owners, investors and builders this was a most remarkable test of fire proof construction, and shows what advances have been made in this direction in the last few years.

The Besly Band Polishing Wheel.

An illustration is given herewith of a new polishing wheel which has recently been placed on the market by Charles H. Besly & Co., 10 North Canal street, Chicago. This machine was developed in the firm's own shops. They had found much difficulty in securing expert polishers and were obliged to devise something to meet the emergency. With this machine an inexperienced man of fair intelligence, after a little practice, will be able to do fine work. The wheel is for this reason especially suitable for small shops in which no expert polisher is employed to set up wheels and keep them in order. With this machine the polishing surface can be changed from fine to coarse in a minute or two. The complete machine consists of a pedestal, a countershaft and a spindle to hold either one or two emery band polishing wheels. These wheels are made of cast iron. An elastic surface is produced by a felt covering. The emery or other abrasive material is a piece of emery cloth, which



The Besly Band Polishing Wheel.

is tightened firmly around the wheel. To reset the wheel or change the grade of emery it is only necessary to remove a band and replace it with another. It has been found by the experience of the firm that these wheels are no more expensive than solid emery wheels. The machines are also made with one wheel mounted on the spindle, with the other end of the spindle suitable for buffing, and are furnished with cushioned or with a hard surface.

Statistics compiled by Julius Pintsch of Berlin, Germany, and the Safety Car Heating & Lighting Company of New York, show that up to the end of last May 105,664 cars were equipped with light by the Pintsch system of compressed air gas, being an increase for the year of 7482 cars. At present there are in operation 336 plants for making or compressing the Pintsch gas, being 30 more than in the previous year. In addition to the railroad use of compressed gas by the Pintsch system, 1162 beacons and bouys are so lighted.

What is claimed to be the largest sheet or plate glass ever made in this country has just been turned out at the factory of the Pittsburgh Plate Glass Company at Elwood, Ind. It is 145 x 221 inches in size.

THE WATER METER AS A SANITARY AGENT.*

The value of the water meter as an aid in husbanding scanty water supplies and postponing the day when additional pumps, larger mains and more capacious reservoirs will become imperative is fully appreciated by most water works men. Members of the same class, as a rule, also appreciate the fact that the water meter is the most equitable and reliable means of apportioning the cost of public water supplies between private consumers. But neither water works superintendents nor any other class of city officials have more than begun to realize the possibilities of the water meter as an aid to sanitation. As for the general public, and even large numbers of health officers and other sanitarians, the water meter is commonly looked upon by them as a sanitary evil rather than a sanitary necessity. In fact, nearly every one who has introduced or tried to introduce the meter system knows only too well that the strongest opposition encountered often centers around the plea that meters are a menace to health because they cause people to skimp in the use of water. The weakness of this and other assertions that meters are unsanitary has been repeatedly shown, but so far as I am aware no one has considered the water meter from the single standpoint of its beneficial relation to the public health.

The chief sanitary benefits which result from the use of water meters are:

1. Pure water supplies.
2. A wider and freer use of public water supplies.
3. The extension of sewerage systems and their introduction into the smaller cities and towns.
4. More money rendered available for other sanitary improvements.

1. The need for purer water can scarcely be overestimated. Typhoid fever alone, a large percentage of which is due to impure water, claims its thousands of lives every year. Besides this disease many other minor ailments and much poor health are due to unwholesome water. The indirect damage to health resulting from water which is so muddy or otherwise unpleasant as to discourage rather than encourage its use for bathing purposes cannot be estimated.

The rapid increase in water consumption on the one hand and the equally rapid pollution of water supplies on the other renders the problem of securing pure water more difficult every year. The growing appreciation of the dangers of polluted water supplies, welcome as it is, adds to the perplexities of those charged with the administration of water works plants. As the consumption and waste of water mounts up, the choice gradually narrows to some distant source of supply or the purification of water from some nearby source. Even if the former is chosen the chances are that sooner or later purification will be required.

The greatest obstacle to any improvement in the character of water supplies, whether by purification or going further afield, is the large volume required to meet present demands and the far greater quantity that must be provided to keep pace with the increasing use and waste. The consensus of opinion on the part of all who have given careful attention to the subject is that waste, not use, is chiefly responsible for the leaps and bounds in water consumption, and that the waste may be curtailed, often to the extent of cutting the total consumption in half, by the use of meters. If this be true, and I am firmly convinced that it is, then the water meter may be made one of the most efficient sanitary agents of the century. Its universal introduction would go far toward solving the problem of providing pure water to every city dweller in the country.

Incidentally the meter system would aid in the struggle for pure water by diminishing the amount of sewage and thus simplifying and cheapening its final disposal without polluting some water supply. This in itself is a strong argument in favor of the use of the meter.

2. A wider and freer use of public water supplies would follow the universal meter system. The reduced cost of the smaller supply, both in construction and operation, would make works feasible in many places now without them and would aid in extending existing plants to sparsely settled districts. In all except the larger cities of the country there are many people living on streets provided with water mains who continue to use private wells, often badly polluted, rather than pay a yearly rental for water. Reductions in this rental, made possible by the use of meters, would encourage the abandonment of wells.

In addition to the foregoing considerations, and in some respects still more important, the meter system would extend the use of water by people of moderate

means and by the very poor, many of whom under schedule rates have access to but one faucet for drawing water. That faucet is located over the kitchen sink or in some common hallway or yard. Cold water is all that can be drawn from it, which materially lessens its use for sanitary purposes. Now, meters not only tend to lower water rates through the saving in water already noted, but they make possible a complete readjustment of the cost of water service. First they make it easy to place the cost of fire protection, street sprinkling and water for public building in the general tax levy, or to assess it upon the real and personal estate and the several public departments directly benefited. This would naturally lessen the portion of the cost of water service which would fall upon the private consumers. The water meter would then distribute the cost of private service, not according to the number and kind of plumbing fixtures a family happens to have, but in proportion to the actual amount of water which it uses and wastes. By means of this reduction and equalization of the cost of domestic service a family which, under fixture rates, could afford only a cold water faucet at the kitchen sink, might under the meter plan at no additional expense have a bathtub and other fixtures with hot and cold water, and perhaps a water closet besides.

3. The relations between water supply and sewerage are so intimate that what favors the introduction of one ought always to favor the others as well. All small, and an increasing number of large, towns are being seweraged on the separate plan—that is, one set of conduits removes household wastes, or sewage proper, and (but often not till years later) another set is provided for the removal of storm water. Obviously, the less the water consumption the less will be the sewage and the smaller may be the pipe system. If the sewage is either pumped or purified any decrease in amount is doubly welcome. The net effect of the use of meters on the sewerage system is to reduce its cost, and thus to make it more readily available to all cities and towns and to all people in each city. The introduction of sewerage systems, and their use after being introduced, is far less general than is the case with public water supplies. Moreover, many people defer water connections until sewer connections can also be made on account of the well-known cesspool nuisance. The sanitary benefits of sewerage connections with the abolition of privies and cesspools are too obvious to need exposition here.

4. Thus far the water meter has been considered in relation to the public through the water works and sewerage systems. Important as these facilities are, it should not be forgotten that every dollar that can be saved through the use of meters is urgently needed for the sanitary betterment of the city in other particulars. Water supply, very properly, has always ranked first among municipal public works. But hundreds of American cities are spending money in a vain struggle to keep pace with increasing water consumption and waste, which, under a proper meter system, would be available for such sanitary needs as improved methods of sewage and garbage disposal, sanitary pavements, healthful school buildings, efficient health board work, and ample parks and playgrounds.

New Boiler Plant at Buffalo.

The American Radiator Company have acquired 25 acres of land on Hertel avenue and the Delaware, Lackawanna & Western tracks, in the northern section of Buffalo, N. Y., where they are about to erect a new plant devoted exclusively to the manufacture of cast iron house heating boilers. A portion of the equipment now employed at the Michigan plant of the company in Detroit will be transferred to the new plant as soon as it is completed. The buildings, for which contracts have been let, will be of brick and of permanent construction.

During the past two years several new types and sizes of boilers have been brought out by the American Radiator Company, and it is contemplated to add to their already extensive assortment. On the completion of this new plant a more satisfactory distribution of facilities for the production of boilers will have been accomplished, which will enable the concern to consolidate shipments of boilers with radiators at both Buffalo and Detroit. It is planned to have the plant ready for operation by next summer.

H. W. JOHNS MFG. COMPANY, 100 William street, New York, are distributing a pamphlet describing their Asbestos Fire Felt Coverings for steam pipes, boilers, &c.

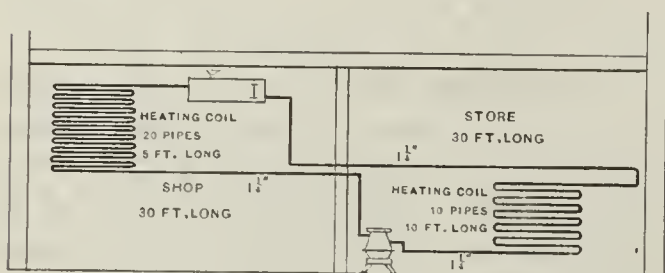
* Paper read by M. N. Baker of New York City at the eighth annual convention of the American Society of Municipal Improvements, at Niagara Falls, N. Y., October 24, 1901.

A FREAK, BUT IT CIRCULATES.

BY A SALESMAN.

In traveling among the steam and hot water heating trade a salesman meets with many peculiar views as to how a job should be piped, and the plants that are seen, in many instances, are peculiar, to say the least. Many men would save themselves trouble if they would recognize the fact that the sooner the hot water from a boiler reaches the highest point in a system the better it will circulate. Modifications of this general principle, of course, would be needed to meet special cases. Where circumstances will permit, if the main from the boiler is carried to some high point and the branches are distributed from it, the water will cool and fall and the circulation will be better than if a reverse method is followed. Now, notwithstanding this, there are many plants in operation which are not piped in accordance with this principle.

I recently visited a plant which was piped as shown in the sketch herewith. It was used in the store and shop of a plumber and steam fitter. A small tank heater was placed in the store, and a $1\frac{1}{4}$ -inch pipe was carried from the flow connection to a coil made of pipes of the



A Freak, But It Circulates.

same size, consisting of 20 in number, each 5 feet long. From the top of the coil a pipe was carried over to an expansion tank made from an old kitchen boiler and placed near the ceiling of the shop and provided with a funnel for filling it. It was also tapped so as to have a gauge glass for showing the amount of water in the system. From the opposite end of this expansion tank from the opening that is ordinarily used as the cold water connection to the boiler, a $1\frac{1}{4}$ -inch pipe was carried to the extreme end of the store and then carried back to a coil made of 10 pipes 10 feet long. From the lower end of this coil a return was carried to the tank heater.

The fact that this system was circulating satisfactorily and heating the building goes to show that water will circulate even if systems are not arranged in accordance with what most men consider the best practice. Nine men out of ten who have had any experience in hot water heating would have carried the flow main from the tank heater up to a point near the ceiling and have branched each way to supply the radiating coils. A small pipe would have been taken from the highest point on the flow main and carried over to the expansion tank and connected so as to allow the air to escape from the piping system. The pipe from the expansion tank should have been carried to the return main on the tank heater, in the case illustrated. In the system shown it is my opinion that the success is due to the large coil on the return end of the system. When the water in the lower coil cools and becomes more dense it naturally falls to the tank heater and makes room for warmer water to flow around and fill the space it formerly occupied.

The Modern Spray Bath.

The Workingmen's Club of Hartford, Conn., were recently entertained by Dr. E. K. Root, who lectured on the advantages of the modern spray bath, with a view of increasing the interest in public baths. He pointed out that there was a tonic effect from the spray bath that was very valuable in stimulating the skin and thus providing protection against subsequent exposure, particularly when the temperature of the water is gradually

lowered as the bath continues. The low cost at which the spray bath can be given, the speaker said, especially adapts it to success as a popular bath. Attention was called to the fact that the basement of public schools could be very readily fitted up with spray baths, with great benefit to many school children. The cleanliness of the spray bath was compared with that of the ordinary bathtub, and a comparison in its favor was made in the cost of the apparatus. This is a question in which all plumbers are interested. They can lend their assistance to the extension of the use of public baths with benefit to the community and profit to themselves.

Acetylene Gas Abroad.

In compliance with a request from the Treasury Department United States Consul Kehl, writing from Stettin, Germany, reports as follows regarding acetylene gas abroad:

Acetylene gas is emerging from a crisis which almost retired it as an illuminant. About eight years ago, when this gas was in its infancy, numerous devices for its manufacture sprang into existence; but through ignorance and improper constructions many fatalities resulted. The press denounced its use; the police authorities throughout Germany placed almost prohibitive restrictions upon acetylene generators; the preparing of liquid acetylene was strictly forbidden; insurance companies protected their interests by high rates and special requirements in addition to those prescribed by the police. As a result only safe and meritorious machinery is now constructed.

The advantages claimed for acetylene gas are many. It is the nearest approach to sunlight, with a power said to be 15 to 20 times as great as ordinary coal gas, and with six times less heat when used for illuminating purposes. For the manufacture of gas producing contrivances and the various acetylene burning devices Germany has about 235 factories, the most important being the Allgemeine Carbid und Acetylen Gesellschaft, Berlin. This concern manufactures everything in the line of acetylene producing machinery and the different gas consuming articles.

The imperial testing station for marine lights, situated close to Stettin, has officially tested the lighthouse burner and reflector manufactured by the firm above named. The chief of the station, in a personal interview, expresses himself as follows:

For lighthouses out of reach of electricity, and easily accessible in winter or summer, acetylene would render good service, although it can in no way be compared with electricity in reliability, on account of the many details which must be looked after when burning this gas. I prefer electricity. Most of the French coast lights are electrical, while our lights are all petroleum.

At the Altenbruch lighthouse, on the Elbe, there have been some experiments with acetylene, giving the following results: By a consumption of 102 liters per hour 302 candle-power was produced and by 175 liters per hour 435 candle-power. An objection to acetylene for "long range" lighthouses, as advanced by an experienced sea captain, is that in a fog or thick weather it "walls" too easily. A petroleum light will penetrate a fog to a greater distance than any other illuminant. For clear weather acetylene probably gives the best results. In the Stettin district there are 15 navigators' lights, five of which are burning acetylene; one, on an artificial island in the Oder River, is to be replaced by electricity, due to the difficulty of approach during the period of ice.

The acetylograph is a portable search or signal light for army use and can be used by day for signaling purposes. This apparatus, carrying its own generator, is mounted on three legs similar to those of a camera. The hand search light for the hospital or medical corps has a small generator attached to a belt and connected with a reflector by a hose about 3 feet long.

United States Consul Bergh reports from Gothenburg, Sweden:

In this consular district acetylene gas has not yet come into use in lighthouses, for buoys or for beacons. Acetylene gas is used on several Swedish steamers for the top light, the side lanterns and for search lights. It has recently come into use at several railroad stations and favorable reports have been made. The gas is, furthermore, used in carriage and bicycle lamps and hand lanterns in factories, and for small cooking and laundry stoves. It is considered that acetylene would also be adapted for lighting large country estates, churches, hotels, &c.

There are in this city two concerns which manufacture the apparatus, but only a few have yet been ex-

ported. I have also seen here appliances of foreign manufacture. Calcium carbide—used for the production of acetylene gas—is manufactured in Sweden. The largest factory in this part of the country is probably the one at Trollhättan, some 50 miles from this city. I am told that calcium carbide is exported chiefly to Hamburg, but also to Japan and adjoining countries. At present the price of calcium carbide is 20 kronor per 100 kg. (about \$2.43 per 100 pounds) at the factory.

According to calculations made by the manufacturers of acetylene works the use of the gas is economical, especially in this country, where petroleum and coal are considerably more expensive than in the United States. It is calculated that a factory using 50 lamps at 16 normal candle-power each, burning 720 hours per year, would have the following yearly expenses for lighting:

Using petroleum, refined, at present price	\$149.97
Using coal gas in common burners	291.85
Using electric incandescent lamps	236.88
Using acetylene gas	125.53

These calculations are based on the average price of gas and electricity and counting calcium carbide at 27 kronor per 100 kg.

If certain regulations are complied with and the gas works are of a type approved by the insurance companies, the latter do not make any discriminations against persons or business firms who use acetylene.

THE FAULT OF THE BOILER.

BY A. T.

It is to the credit to the manufacturers of the modern perfected boiler for house heating purposes that it has so few defects that would tend to interfere with its general operation. That some boilers could be more economical is plain to any one who has made a study of this type of heating apparatus, and it is also true that others could have some of the details of their equipment simplified so as to enable them to be more easily set up by the heating contractor, thus effecting a saving in time and cost. The time has entirely passed, however, when the constructions placed on the market by the older houses have such defects as will interfere with their operation when properly set up and connected with a piping system properly proportioned and run. Nevertheless, to many boiler houses comes the complaint from the heating contractor that the boiler last purchased and set up does not give satisfaction. Complaints of this kind are often of a general character, and are rather exasperating under the circumstances, especially when any attempt to secure further information or details as to what might in some way cause the trouble only brings forth another general statement that "the work has been done all right and your boiler does not come up to its rating," with a suggestion that the sooner a man is sent to see what is the trouble with the boiler, the better for all concerned.

Every boiler house has in its employ some one of enough engineering ability to look over a heating system and locate the trouble, and many times a man is sent who is really master of his business. Sometimes the surface in the piping system is not included in the amount of radiation which the boiler has to carry, and in consequence a smaller sized boiler is selected than is needed for the work. The boiler manufacturer cannot be responsible for this. Nevertheless the expectation prevails with such customers that the makers will give their support in making what changes may be necessary. Sometimes when the boiler has sufficient capacity the job is "shy" on radiation, as it is expressed in the trade. Consequently the building cannot be heated, no matter how hard the boiler may be fired or how well arranged the piping may be. Again, the arrangement of the piping system in some cases is such as to lead to the interference that there was no intention that the heating medium should reach the radiators without overcoming friction and other unnecessary impediments. Attempts are made to combine single and two-pipe systems and circuit systems in such a way as to nullify the benefits of either. Valves are sometimes so placed as to interfere with the operation, and air valves are either omitted from the system or placed where they cannot be of any practical use. The failure of some of the radiators to heat because they are filled with air is sufficient for a broad condemnation of the boiler and the occasion for a

visit from the manufacturer, no matter how distant his plant may be, to point out this or some similarly simple trouble. Radiators are often so connected that they become filled with water on steam jobs and interfere with the carrying of a steady water line in the boiler. Often a window is left open so that the cold air can blow on a steam radiator, thereby condensing the steam as fast as the boiler can make it, and interfering with the heating of other parts of the house.

The defects above enumerated are only a few of the many simple causes of trouble which the steam fitter insists are caused by the boiler. Acting upon this assumption, he claims that the manufacturer should see to it that his goods are properly constructed and tested before they leave his factory, and demands that he send a man to remedy the defects, which interfere with the steam fitter's business by causing his customer to become dissatisfied. Every manufacturer is willing to lend his assistance wherever it can be of benefit, and this fact induces some steam fitters to impose upon him. The willingness to give aid, however, merits in return an effort on the part of those seeking assistance to describe their troubles in such a way that a remedy can be pointed out without the loss of time and the expense incurred in a visit to the point where the trouble exists. It will take but little time to go over any troublesome job and make a complete rough sketch of the piping system in the cellar, with a plan of the upper floors, the location and size of the radiators, the sizes of the pipes leading to and from them, with the method of making connections, and the location of valves. In fact this work, if carefully done, will in many instances enable the steam fitter himself to locate the cause of the trouble and apply a remedy without further assistance. Even if he is unsuccessful, it will certainly qualify him to more readily understand any plans, drawings and written instructions that he may receive for overcoming troubles which he may report.

I am satisfied that manufacturers will agree that I am not too severe, and that neglect to follow this last suggestion is due in many instances to pure and simple laziness, so that the demand for assistance is an imposition. Such men as those referred to fail to appreciate the fact that the assistance they demand is purely a favor, in no wise due to them, and that the manufacturers are only impelled to assist them in order that the reputation of their goods may not suffer. The steam fitter is paid a profit, to which he is only entitled when he understands his business sufficiently well to do his work in accordance with suggestions that may have been given so that his customer will have no cause for complaint. The manufacturer will make every effort to fill the orders of such a one promptly, even during the busy season, when there is a greater demand for goods than can be readily supplied. In the midst of the season, when there is naturally a shortage of goods, it is only natural that the boiler maker will send goods more readily to those customers who are not in the habit of laying all sorts of faults to the boiler, but who understand their business and set up boilers so that their good reputation is extended.

The P. and S. S. League.

The feature of the bowling tournament of the Plumbing and Steam Supply League at the Monarch alleys, New York, on Monday night was the first defeat of the team of Behrer & Co., who were beaten by the Salesmen team, the latter winning both of their games. The team of F. Adee & Co. suffered defeat by the Salesmen and also by the Behrer & Co. bowlers. On Thursday night the team of F. N. Du Bois & Co. scored two victories, Charles W. Frean making a score of 202. The team of Thomas G. Knight received a double dose of sympathy, and the team of H. P. Read Lead Works experienced both delight and despair.

On Monday night A. Behrer soared aloft with a score of 192, then came down with a dull thud to 95, and on Thursday night C. W. Frean dropped to 110 after his feat of 202. The first game on Thursday night was very close, when the Knights with 675 succumbed to the Lead men with 677. The interest in this tournament has made

it quite a social event in the trade, and many of the older members have dropped in to shake hands with the bowlers and to join in the shout over good plays.

LEAKS.

BY PLUG.

They builded a tower to shiver the sky, and wrench the stars apart,
Till the Devil grunted behind the bricks, "It's striking, but is it art?"

—*"The Conundrum of the Workshops."*

In January last the manager of a large estate came into our office in a desperate hurry and asked that some one go with him to one of their houses to diagnose the case of a steam boiler gone suddenly out of commission. The weather was so cold that it was out of the question to take time to put in a new boiler, and it must be fixed on the spot somehow.

His ground certainly seemed to be well taken, when it was considered that the tenants were of that class who seize on any pretext to move out and leave a quarter's rent overdue. "Must bluff 'em through the winter somehow," he pleaded.

I found the boiler to be an upright tubular, very dirty as to tubes, and neglected looking withal. After rummaging about the fire box for some time with a poker, I discovered a hole in the O. G. flange of the inner shell, at the bottom, and the iron so thin about it that it was easily enlarged by simply twisting the poker. I explained to the manager in carefully chosen words the utter hopelessness of doing anything with it. Then I qualified that by saying it was possible to patch it, but that it would take as long to do that as to put in a new boiler, and after it was done I could not guarantee the job, for I didn't know where it would break out next. I thought the time would be better employed putting in a new one. I then explained that the boiler must be disconnected and laid on its side, to get at it properly; would take two days to do it, and I again repeated, with emphasis, we could not guarantee it; probably start some other holes handling the boiler.

"How long will it take you to put in a new one?"

"Two days," I promptly answered.

Evidently he had been there before, for he almost snarled back at me. "Yes, two days after you get it." Then with new inspiration, he said, "Can't you plaster or brick it up?"

Seeing that further discussion was useless, and finding myself getting warm under the collar talking to him, I said I would call him up at his office in half an hour, and tell him the best I could do. (Thought it easier to surrender the job over the wire than waste time jawing about it there.)

In going back to the shop I made up my mind that if anything could be done we had one particular man who could do it. So I laid the facts before him, to act on as he saw fit.

He gave me a pitying smile as he remarked "That's easy. I'll fix that up before dinner." I asked no questions, but let him go his way. He called on the manager on his road, and told him not to worry. At 3 o'clock he was back at the shop, job finished, steam up and everything lovely.

That boiler ran through the winter without interruption, and, like the seven-leagued boots, is running yet. The manager says he isn't worrying, so long as we have that man about.

What had he done? Merely cleaned the sediment and scale from inside the hole, sludged some Portland cement into it, and protected that on the outside with a piece of fire brick, bedded in more cement.

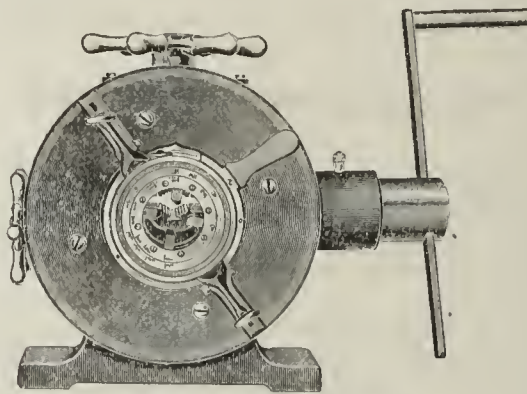
Surely many fitters would exclaim with our friend, the Father of Critics, "It's striking, but is it art?"

A DIAMOND STUD was the token of esteem which the employees of the Buick & Sherwood Mfg. Company of Detroit, Mich., presented to the retiring president of the concern, D. D. Buick. Thomas D. Buick also leaves the company, and a diamond stick pin marked the affection of the men who have been working under him. The utmost good will of the 375 employees is with both gentlemen. It

is said that they are about to form another concern to manufacture a similar line of goods to that turned out by the old company, now controlled by the trust. The new plant will be situated near the present factory. Mr. Buick has been for 14 years in charge of the Buick & Sherwood plant.

The Oster Pipe Threading Machine.

The Oster Mfg. Company of Cleveland, Ohio, are introducing a new pipe threading machine for bench use, and also one for power with hand attachment. The former, which is here illustrated, has a capacity of $\frac{1}{4}$ to 2 inch pipe. It has an expanding die head, which is graduated on the face plate. The quick opening dies are controlled instantly by a simple cam movement, without the use of screw driver, wrench or other tool. By the use of an adjustable positive stop the operator is enabled to cut any number of duplicate threads with perfect accuracy. The dies are adjustable to all variations in pipe and fittings. The vise is made to center



The Oster Pipe Threading Machine.

the pipe perfectly, thereby insuring straight threads. The pipe is drawn up to the dies by hand wheel, rack and pinion.

Thermometers and Hot Water Pipes.

Although the hot water thermometer is a very inexpensive appliance and serves more than one useful purpose, says the *Ironmonger*, it is employed to a far less extent than it might be. It is scarcely applicable to domestic hot water supply pipes, as the temperature in a pipe does not indicate with any certainty what the temperature at a tap will be, nor can it indicate what quantity is available at any temperature. It is in heating circulations that the thermometer is useful. In the first place, the attendant can see what his fire is doing, and after a few days the action of the thermometer will tell him many little things much plainer than the application of the hands to the pipes can do. A thermometer will also indicate pressure, for this and temperature run together, although normal or low pressures will not be registered as with an altitude gauge. It is high—excessively high—pressures that will be shown, for they are accompanied by abnormally high temperatures, and the thermometer will indicate these. A particularly useful purpose the thermometer serves is in admitting of correct heat regulation in the rooms. Scarcely two winter days are alike in coldness, and the boiler attendant has nothing to guide him in regulating the damper and the fire. With a thermometer he can in a week learn to what temperature to limit his water on the various kinds of winter days, and an occasional glance at this heat indicator will show whether the fire and damper need attention. The thermometer is the next best thing to an automatic heat regulator; it automatically indicates, and a skillful attendant can do the rest.

At a large London club the hot water apparatus has three thermometers, one by the boiler, where the stokers and engine attendants are; the others are fixed where the chief engineer most frequently passes. The latter personage each day gives out the temperature at which the water is to be kept (unless the weather changes and further orders are given), then the stoker keeps his eye on his thermometer while his chief occasionally checks him upstairs.

The Mueller Heaters.

The L. J. Mueller Furnace Company of Milwaukee, Wis., have prepared for distribution among the trade, to increase the sale of their high grade heating apparatus, a hanger 28 x 40 inches in size. The hanger consists of highly finished paper mounted on a cloth back, the top and bottom being protected by metal binding. It is printed in two colors and presents broken views showing the internal arrangement and construction and water and fire travel of their hot air furnaces, combination air and water heaters, and steam and hot water boilers. The hot air furnaces are made for both wood and coal and are all of cast iron construction with steel plate radiators. A special furnace for school and church heating is designed for brick casing, arranged to burn either coal or wood, and to have a long fire travel so as to utilize, as far as possible, the heat of the products of combustion. The boilers are made both horizontal and vertical sectional, arranged to effect a long fire travel and to present a large surface to the fire. The hanger is well calculated to attract the attention of visitors to the store of the heating contractor, and should prove valuable as a means of explaining the features of merit to the prospective purchaser.

THE FREEZING OF ACETYLENE APPARATUS.

In the Acetylene Notes which have appeared in our columns, says the *Ironmonger* of London, repeated reference has been made to the dangers accruing from the freezing of acetylene apparatus. We again draw the attention of those of our readers who possess or sell such plant to this matter, for, neglecting the explosions which have been produced by meddling with a generator in presence of a naked light, by far the majority of accidents on the Continent have arisen through the freezing of the apparatus, followed by injudicious attempts to thaw it. As we have had no winter to speak of for three or four years, we are naturally apt to overlook danger from frost. All large domestic installations ought to have some provision for warming the generator shed systematically with hot air or water pipes, the heater being placed outside. Quite small nonautomatic plants may be protected with glycerin or calcium chloride in the holder seal, the generator vessel being emptied before evening. Automatic apparatus may with advantage be thickly lagged or charged with calcium chloride solution, but this is not altogether satisfactory. In the absence of proper heating arrangements, or upon an emergency, fresh hot stable manure may be packed round all the apparatus. Washers, water seals and governors may freeze as well as other vessels. If the plant freeze, nothing more drastic than boiling water ought on any account to be employed to thaw it, and the operation should be conducted by daylight, with an outside lamp, or with a Davy lamp inside the shed. No apparatus can be emptied of gas even for days by the opening of all cocks and trusting to diffusion. This proceeding only increases the danger by producing a definitely explosive mixture in the holder and mains of the plant. The use of red hot poker or glowing coal for thawing purposes is little short of criminal.

The principal interest in the above article will be in finding a simpler and more practicable method of avoiding the risk of the freezing of acetylene generators. This risk is far greater in the United States, where the temperature in winter goes regularly down to points seldom or never reached in England. In our severe climate generators are placed in specially built cellars or the regular cellars of buildings where even in a severe spell of cold weather the temperature seldom gets as low as to register 6 degrees F. In consequence it has been the custom of many acetylene men to fill the generators of their customers with a saturated solution of salt water, which, it is claimed, will not freeze until a temperature of 6 degrees F. is steadily maintained for some time. Experts claim that the salt water in no way interferes with the generation of acetylene from the calcium carbide. This method of avoiding a freeze up is much simpler than those suggested in the above article, although the necessity for care in thawing out in case of a freeze up is none too emphatically presented.

GEORGE SCHLESLER, Mansfield, Ohio, secured the contract for a new central heating station at the Wittenberg College in that town.

Heating and Plumbing Notes.

EX-ALDERMAN MAHL, who has conducted a plumbing business in the Sigourney House Block, Hartford, Conn., for 20 years, has taken one of the newly arranged stores in the Eggleston Building, which is being fitted up with a fine display of plumbing materials and provided with a convenient office.

HORN & HARDART are erecting at 831 Filbert street, Philadelphia, a seven-story building, to cost \$40,000, which is to be heated with hot water and will have a complete plumbing system.

N. YAMAMOTO of Tokio, Japan, is in the United States for the purpose of securing materials for a building which the Crown Prince of Japan is erecting in his native city. After spending some time in New York, he visited Milwaukee for the purpose of witnessing the manufacture of some of the plumbing goods which he had purchased.

BENJAMIN F. BARBOUR, Third avenue, Birmingham, Ala., is adding a new branch to his plumbing business. He will make a specialty of Gas and Electrical Lighting Fixtures, of which he is now making a fine display. Mr. Barbour has also in hand a number of important heating and plumbing contracts.

A NEW heating system has been installed in the McGowan Hose house, Troy, N. Y., by Albert McCoubrey of that city.

THE new Examining Board of Plumbers of Pittsburgh, Pa., has been organized. It consists of A. J. Pitcairn, John M. Addy, William T. Taggart and James L. Ewing. Mr. Pitcairn was elected chairman and Mr. Addy secretary. Applications for examination must be filed with the Division of Plumbing and House Drainage. Heretofore an average percentage of 65 passed an applicant; now it is to be 75 per cent.

THE master plumbers of Delaware, Maryland, Virginia and the District of Columbia will hold a convention at Norfolk, Va., on December 9.

EDWARD QUINN has been appointed supervisor of plumbing in St. Louis, Mo., and Curtis Hill second assistant civil engineer in the sewer department of that city.

THE PAWTUCKET STEAM & GAS PIPE COMPANY, Pawtucket, R. I., have a contract for plumbing the Pawtucket Institution of Savings.

S. L. HINCHCLIFFE, New Britain, Conn., is installing a Richmond Heater in the residence of George Elliott in that city.

THE steam fitters' helpers of St. Louis, Mo., who have been receiving wages at the rate of \$2 a day, have struck for an advance of 50 cents. The steam fitters in some shops have acted in sympathy with them, while in others the employers have met the demand and their shops are working.

THE NORWALK HEATING & LIGHTING COMPANY, Norwalk, Conn., are installing a Kelsey Generator in St. Mark's Episcopal Church of that place and another in the residence of Mrs. Henry Ogden.

S. E. DIBBLE, New Haven, Conn., is installing a Hub Heater in the residence of B. J. Harrigan at New Haven. He also has a contract for plumbing and heating in the new school house at Whitneyville, Conn., and will use a Hub Heater.

THE Master Plumbers' Association of Binghamton, N. Y., was incorporated on November 1, with the following directors: Frank P. Kelly, C. E. Boughton, William Liddell, W. H. Morland and V. W. Hadley.

THE journeymen plumbers of Sharon, Pa., have gone out on strike, demanding that apprentices now employed shall be compelled to work four years before they are allowed to handle tools.

M. T. ENDICOTT, Chief of the Bureau of Yards and Docks of the Navy Department, will receive bids until November 23 for a steam heating system for the boiler and work shops at the League Island Navy Yard at Philadelphia.

THE records of the Bureau of Building Inspectors of the city of Philadelphia, Pa., show that city permits were taken out during the month of October for the installation of heating plants at an aggregate cost of \$70,120.

THE MUELLER MFG. COMPANY, Decatur, Ill., manufacturers of Water and Gas Tapping Machines, &c., are rearranging their plant for the more economical production of their goods. Among the notable changes is the building of a new foundry building. The capacity will not be increased and they will require no new equipment.

THE BIRMINGHAM PIPE & CASTING COMPANY, Birmingham, Ala., who were organized in January, 1900, have just completed very extensive improvements in their plant and are now prepared to furnish the legitimate jobbing trade a full line of Soil Pipe and Fittings.

RIDGEWAY & TYLER, Albany, N. Y., have completed the installment of a heating apparatus in the new chapel of the Presbyterian Church, at Rome, N. Y.

A SLIGHT damage, covered by insurance, was done by fire in the plumbing establishment of J. F. Sheehan, 125 Madison avenue, Albany, N. Y., last week.

ATTORNEY-GENERAL BELL has filed a suit in the District Court at Austin, Texas, against plumbing firms in that city which is in the nature of an injunction against the Texas Association of Master Plumbers to restrain them from combining to control the trade in the purchase of plumbing supplies. The defendants named in the suit include 42 names connected with the association of master plumbers, and also the various officers of the association. The petition alleges that two plumbing goods houses in St. Louis have been boycotted for selling material to the Tyler Water Company. In the statement the association is said to be an "illegal, unlawful and injurious combination" in direct violation of the laws of Texas.

GEORGE T. WILSON, a well-known inventor of steam and plumbing appliances, died at his residence, 29 Hudson street, Somerville, Mass., on October 29, aged 55 years. For the past 30 years he had been superintendent in the establishment of Julian D'Este & Co., Boston. He is survived by a wife and nine children.

THE contract for heating and ventilating the new Board of Trade Building, Boston, Mass., has been awarded to Ingalls & Kendriken of that city.

BIDS will be received by L. C. Whitten, chairman of the County Commissioners, until November 12, for heating and ventilating the Penobscot County Court House, at Bangor, Maine.

THE CRANE HAWLEY COMPANY of Cincinnati, Ohio, have gone to some trouble in preparing an elegant exhibit of plumbing goods and fixtures. They recently gave a reception to the local plumbers and architects for the purpose of showing them the handsomest things on the market in the way of Bathtubs, Lavatories, Toilets, Shower Baths and Bathroom Fixtures.

THE GWYNN CENTRAL STATION HEATING COMPANY of Delaware, Ohio, have sent us a copy of a pamphlet devoted to a description of the Gwynn system of heating. The publication contains half-tone engravings of the electric light, heat and power plant in Delaware, Ohio, showing the pumps for distributing hot water through some two miles of street mains, together with pictures of many buildings which are heated from the street mains. It is pointed out that no difficulty has been found in securing 15 cents per square foot of radiation for heating during the year, owing to the ideal service rendered and the absence of labor in handling the fuel and of dust from disposing of the ashes. The advantages of the hot water system are dwelt upon in detail. Special stress is laid on the comfort derived from the even temperature maintained in buildings so heated, owing to the attention at the central station, where the water is heated in accordance with the requirements of the weather and circulated at a higher temperature when the weather is extremely cold, or at a lower temperature when the weather is milder, so that the householder has little or nothing to attend to.

G. W. CHOWN, registrar of Queen's University, Kingston, Ont., will receive bids until November 18 for central heating, power and electric plants for the university and the School of Mining buildings at Kingston.

GEORGE H. STICHTER, Reading, Pa., is equipping the Liberty Dye Works of that city with five water closets and a complete bathroom, together with the necessary draining system. He is also plumbing six houses for Hoff Brothers and putting in a new plumbing system in the Jefferson House for Henry Wise.

THE strike in the plumbing trade in Minneapolis, Minn., has been settled by an arbitration committee.

JOHN HICKMAN of Brockton, Mass., has a contract for the Slate Roofing of the new office building of the Richard Borden Mfg. Company, at Fall River.

THE KNIGHT & JILLSON COMPANY, Indianapolis, Ind., dealers in gas and water supplies and plumbing goods, says the *Sentinel* of that city, deny the report that they have sold their business to the Crane Company of Chicago.

New Firms and Changes.

THE TWENTIETH CENTURY ACETYLENE COMPANY have been incorporated at Buffalo, N. Y., with a capital of \$100,000 by Frank R. Roberts, Joseph B. Roberts and James A. Roberts.

GEORGE GILMAN has purchased the plumbing, tin-smithing and stove business of J. D. Burley, St. Johnsville, N. Y. Mr. Burley contemplates a trip to Jacksonville, Fla., with the idea of conducting a similar business in that place.

THE CHARLOTTE PIPE & FOUNDRY COMPANY, Charlotte, N. C., have been incorporated, with a capital stock of \$10,000, by W. F. Dowd and others.

Closing of the Pan-American Exposition.

The Pan-American Exposition at Buffalo, N. Y., which closed at midnight on Saturday last, was not a financial success. It is estimated that the losses on the fair will approximate \$4,000,000. This loss will fall upon the holders of the common stock, the holders of the second mortgage bonds and the contractors who erected the buildings. The latter, it is said, will lose about \$1,000,000. Most of the concession holders also are understood to have lost money; to some it has meant ruin. The only persons financially interested in the undertaking who will come out without a severe loss are the holders of the first mortgage bonds, who will recover about 80 per cent. of their money. The stock was subscribed for by citizens of Buffalo and its vicinity in small lots of from 1 to 100 \$10 shares. The undertaking, while disastrous to those who backed it, no doubt has been of considerable value to the commercial interests of the country. The total number of admissions for the first six months during which the fair was open was 8,295,173, which was only a little over one-half of the attendance that had been calculated upon by the promoters of the exposition. Several causes probably contributed to the comparative failure of the fair, including the great snow storm of last April, which kept many visitors away, and more particularly the assassination of President McKinley, which proved a severe blow to the interests of the exposition. The gates were closed at that time for two days and when they were reopened there was a drop of 12 per cent. in the attendance, and this falling off was not recovered.

A striking method of advertising was recently adopted by a bicycle agency at Kalgoorlie, Western Australia. They put into their show window a dilapidated wheel bearing this notice: "Worth about £3. No drop in bracket, enamel is ruined, nickel dull, tires punctured, wheels buckled, frame out of line, one crank broken; will be on exhibition again in one week; come around and look at it then." When the people looked into the store window a week afterward they saw the same wheel made "as good as new."

SLATE FOR ROOFING.

In discussing the subject of slate and slate roofing a writer in an exchange makes the following comments which may not be without interest to some of our readers: The most prominent feature of slate is its cleavage along parallel lines. Roofing slate is prepared by splitting the blocks of slate as they come from the quarry into thin slabs. For this purpose a broad, thin chisel is used, and the blocks are split first into two more or less equal parts, each part split through the middle again, and so on until the entire block is divided into slabs of the proper thickness. During this process the edges of the block are kept moist, to facilitate the accurate cleavage of the stone.

After the slates are split to the proper thickness they are trimmed to size by a sort of cleaver process, the cleaving instrument being struck across the plate over a shearing edge on a block. Ordinarily this process is operated by hand power machines which are set to trim the slates to any size desired.

Slates ordinarily occur in such colors as dark blue, bluish black, purple, gray and green. Reddish and lighter yellowish color slates are also occasionally found, but are not as common, and are consequently considerably higher in price for the same quality of slate. Some slates are marked with spots of a different color. For instance, dark purple slates frequently have spots in them of light green. These spots are not injurious to the quality or durability of the slate as a rule, although they mar its appearance.

A good slate should be hard and tough, although liability to abrasion does not always indicate an inferior material. Some softness indicates good weathering qualities. If it is too soft it will absorb moisture, nail holes will become enlarged, and the slate becomes loosened. A good slate should give a sharp, metallic ring when struck. It should not splinter under the slater's axe, nor should it be tender or friable at the edges. It should not absorb water to any appreciable extent. An excellent test is to place a slate on edge half its depth in water, and if after 12 hours the line of absorbed water has reached the top of the slate, it should be rejected. If it does not rise more than $\frac{1}{8}$ inch, it may be considered as practically nonabsorbent. Good slate should not absorb more than one-half of 1 per cent. of its weight of water.

Slates are made of a wide variety of sizes, the larger sizes being used upon large areas of roof, such as factory buildings. The small sizes are more commonly used on residences and roofs of lesser area. A common size for house roof is from 6 x 12 inches to 10 x 14 inches.

Bands, ribbons or veins of a darker color running entirely through a slate are always dangerous, especially when they run along the length of the slate, as the slate will nearly always break or split along such a line. Even if this does not occur, these bands will generally decompose on exposure to the weather, causing a failure in the slate and a leak in the roof.

Slates are generally laid on wooden sheathing, preferably of fair thickness, matched and dressed, covered with tarred paper or felt. Sometimes the slates are laid on roofing laths nailed to the rafters at such intervals as to permit of nailing the slates to them. This, however, does not make as good a roof. On iron roofs slates are frequently laid directly on small purlins spaced like the roofing laths, and in this case the slate is fastened with wire passed through the holes in the slate and twisted around the purlins. Special forms of metal fasteners are also on the market for this purpose.

In laying slate on wooden sheathing copper composition or galvanized iron nails are ordinarily used, about $1\frac{1}{4}$ inches long, with ragged shank, driven through holes punched for the purpose in the slates, one near each corner. Some skill is necessary in properly nailing slates to a roof, as if the nails are not driven snug enough the slates will have some play upon the nails, while if they are the least bit too tight there is danger of the slate cracking, either when the nails are placed, or afterward, due to some movement in the roof surface.

The top courses of slate along all ridges and hips upon roofs, and also from 2 to 4 feet from gutters, should

be bedded in some proper cement that will make these parts entirely water proof, throughout all joints and miters. Care should be taken that the lower edge of every slate fit as closely as possible to the exposed surface of those below it, and that the vertical joints between slates be as close as possible, and occur only on the center line in the next course below.

Increased Use of Terne Plate Roofing.

A careful inquiry into the state of the roofing plate trade, says *Tin and Terne*, develops the interesting fact that the production has increased to a very marked degree of late. As a result of careful investigation it may be stated that the production of all grades of terne plate in the first six months of this year exceeded the production in the same period last year by fully 96 per cent., so that in the space of one year the production has very nearly doubled.

The indiscriminate use of any kind of terne plate for roofing a few years ago gave this form of roofing a rather bad reputation in some quarters. A good many of the producers were possibly not very well informed as to the proper processes to make a roofing plate which would stand the weather, and those makers who have steadily produced a good article had to suffer along with the whole trade. Added to this was the general lack of information as to how a roof should be taken care of in order to get the best results. There has of late been more thought given to the subject of paint, and there is no question that makers of terne plates are putting up a better article than formerly. The public also is learning to discriminate, and not use the cheapest grade obtainable, but is rather buying a better grade, which naturally gives better results and leads to increased consumption.

The evidence that the tendency is toward the better grade of roofing, as against lightly coated plates which should be used for temporary structures only, lies in the fact that while last year the quantity of terne plate produced which carried a coating heavier than, say, 18 pounds per double box was about one-fourth the total terne plate production, the proportion in the first half of this year is found to be close to one-third, the increase in the production of common ternes being probably a little under 85 per cent., while the increase in the production of the heavily coated plates was close to 130 per cent.

There is no question in the minds of those who have made a careful study of the subject that terne plate is the best form of roofing, all things considered, provided the plate is of good quality and the roof is properly taken care of. The trouble has been to make sure that good plates were being used on the building, and that the roof was properly taken care of afterward. It is not an easy matter for an architect to persuade a builder to employ the best material and architects have frequently refrained from specifying a particular brand, which they had reason to believe would be satisfactory, for fear of their motives being questioned. It is very gratifying to note that all signs point to a continued increase in the consumption of terne plate. While the production now does not constitute more than about one-eighth of the total production of tin and terne plate in the United States, a continuance of the increase noted in the past year will soon put this branch of tin plate industry in a more important place than it formerly held.

THE WAIS & ROOS PUNCH & SHEAR COMPANY advise us that they have changed their title and hereafter will do business under the name of the Cincinnati Punch & Shear Company. This change of title does not involve any alteration in the organization of the concern except that Christ. Wais is no longer connected therewith. The officers of the Cincinnati Punch & Shear Company are Henry Roos, president; Christ. Roos, vice-president, and H. M. Moore, secretary and treasurer. The above officers, with F. G. Cross, Julius Pfleger and C. B. Matthews, form the Board of Directors.

C. H. WILLISTON, Fall River, Mass., has the contract for laying the Gravel Roofing of the new mills of Cheney Brothers, at South Manchester.

Covering a Conical Tower with Sheet Metal.

BY WILLIAM NEUBECKER.

One of the most difficult jobs in flat or standing seam roofing is that of covering a conical tower. As the roof in question is round in plan and tapering in elevation, it is necessary to know the method for cutting the various patterns. In Fig. 1, let A B C be the elevation of a tower to be covered with flat seam roofing, using 10 x 14 inch tin at the base; the tinning to be laid on two-ply felting, and each sheet nailed with four $\frac{7}{8}$ -inch wire nails, the sheets being edged not less than $\frac{3}{8}$ inch to insure a good lock. Assuming that the tower at B C is 10 feet 6 inches in diameter, we will, at any convenient place at the building, strike a quarter plan, as for example that indicated by J E F, which will be used when getting out the pattern for the bottom of the gutter shown by dotted lines at B and C. The straight part of the gutter requires no pattern, and the slant part is obtained the same as for flaring work. As the diameter of the tower is 10 feet 6 inches and equals 126 inches, the circumference is obtained by multiplying this amount by 3.14, which equals 396 inches. As 10 x 14 inch tin plate is to be used at the base of the tower, the nearest width which can be employed and which will divide the base in equal spaces is 13.15 inches without laps, thus dividing the circumference into 30 equal spaces. This width of 13.15 inches and the length of the rafter A B or A C in elevation will be the basis from which to construct a triangle, in which all the patterns for the various courses will be laid off.

To obtain the patterns for the various courses proceed as follows: It should be understood that the diagram which will now be constructed will be enlarged so as to better show the methods involved. At any convenient place at the building stretch a piece of tar felting of the required length, tacking it at the four corners with nails to keep it from slipping. Upon the center of the felting strike a chalk line, as A B of Fig. 2, making it equal to the length of the rafter A B or A C of Fig. 1. At right angles to A B, Fig. 2, at either side, draw the lines B D and B C, each equal to 63.5 inches, being one-half 131.5 above referred to. From the points C and D draw lines to the apex A. As the width of the sheet used is 10 inches, and as $\frac{3}{8}$ -inch edges are put on each side, thus leaving $9\frac{1}{4}$ inches, measure on the vertical line A B $9\frac{1}{4}$ inches in succession, until the apex A is reached. Through the points thus obtained on A B draw lines parallel to C D intersecting the lines A C and A D, as shown. Then will the various patterns 1, 2, 3 and 4 be the net patterns for courses having similar numbers.

Take the shears and cut out the patterns on the felting and number them as required. For example, take the paper pattern number 1, place it on a sheet of tin, as shown in Fig. 3, and allow $\frac{3}{8}$ inch edges all around, and notch the corners, as shown by A, B, C and D. Mark on the tin pattern No. 1 29 more, as 30 are required to go around the tower. Treat all of the paper patterns from 1 to the apex in similar manner.

Of course where the patterns become smaller in size, as at the top, the waste from other patterns can be used.

In Fig. 4 is shown how the sheet should be edged, always being careful to have the narrow side toward the top, with the edges at the narrow and right hand side toward the outside, while the lower and left hand edges are edged toward the inside, all as shown in the diagram. Lay the sheets in the usual manner, breaking joints as in ordinary practice. As the seams are not soldered, be careful to avoid making "busters"—in other words, failing to interlock the joints.

After the entire roof is laid, and before "pounding down," or closing the seams with a mallet, take a tool brush and paint the locks with thick white lead, then close with the mallet. This will make a tight job.

The roof being covered, put the finial, D of Fig. 1, in position, when the job is ready for the painter. As the method used for obtaining the patterns for the various sheets in Fig. 2 is based upon the principle used in ob-

taining the envelope of a right cone, some readers may say that in accurate patterns the line from C to D should be curved and not straight, as shown. To those I would say that the curve would be so little on a small pattern where the radius is long that a straight line answers the purpose just as well in all practical work, for it would amount to considerable labor to turn edges on the curved cut of the sheet, and there is certainly no necessity for it. Supposing now that the tower shown in Fig. 1 were to be covered with standing seam roofing, the method of obtaining the pattern would be a little different. As the reader knows, standing seam roofing, when required in single sheets, is prepared by locking together sheets of the required number, the cross seams being soldered, the side edges then being bent up on each

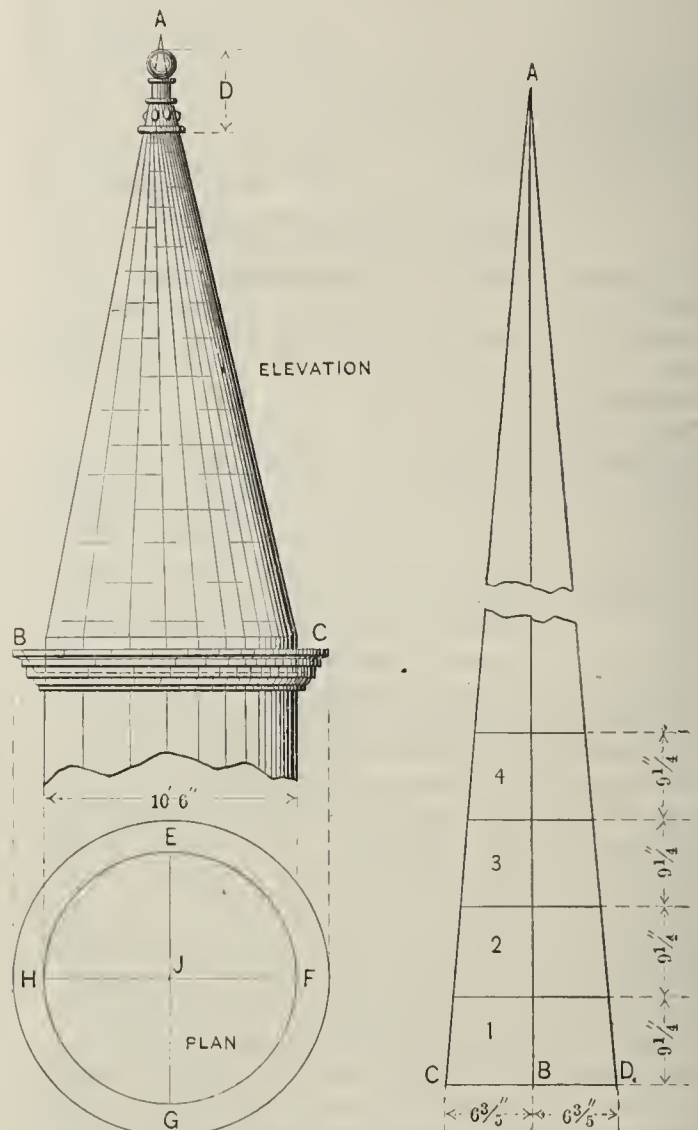


Fig. 1.—Plan and Elevation.

Fig. 2.—Obtaining Patterns for the Various Courses.

COVERING A CONICAL TOWER WITH SHEET METAL.

side $1\frac{1}{4}$ and $1\frac{1}{2}$ inches respectively by means of the roofing tongs. Care should be taken when bending the standing seams that the cross seams do not crack, and to examine same before laying on the roof, as this is very often the cause of leaks which are very hard to find afterward. As the circumference of the tower at its base is 396 inches, and assuming that 14 x 20 inch tin plate is to be used at the base of the tower, the nearest width which can be employed and which will divide the base into equal spaces is 17.523 inches, without edges, thus dividing the circumference into 23 equal parts. Then will this width of 17.523 inches and the length of the rafter A B or A C in elevation be the basis from which to construct the pattern for the standing seam strip, for which proceed as follows: Let A B C D in Fig. 5 represent a 20-inch strip "knocked out," or locked together and soldered, using $\frac{3}{8}$ -inch edges; through the center of this strip draw the line E F. Now measure the length of the rafter A B or A C in Fig. 1, and place it on the line E F in Fig. 5, as shown, from

H to F. At right angles to H F on either side draw the lines F O and F L, making each side equal to 8 14-23 inch, being one-half of the 17 5-23 above referred to. From points L and O draw lines to the apex H. At right angles to H L and H O draw the lines H P, equal to 1 1/4 inches, and H S, equal to 1 1/2 inches, respectively. From points P and S and parallel to H L and H O draw the lines P D and S C respectively. Then will P S C D be the pattern for the standing seam strip, of which 22 more will be required. When getting out the balance of the 22 strips it can be accomplished in the quickest way as follows. Take the pattern just cut, lay it upon the roof or bench, and scribe a chalk line around the entire pattern; remove the pattern. Now start with a 14 x 20 inch sheet and tack it with nails at its lower end to keep it from slipping, as at L and O; then, having the chalk

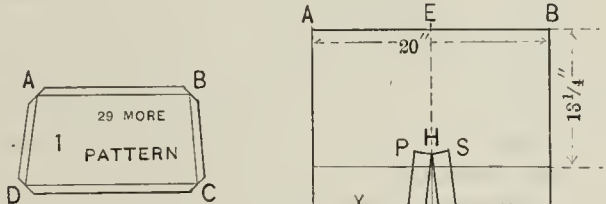


Fig. 3.—Showing Edges to Pattern.



Fig. 4.—An Edged Sheet.

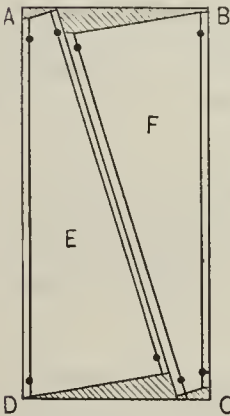


Fig. 6.—Showing How to Cut the Metal.

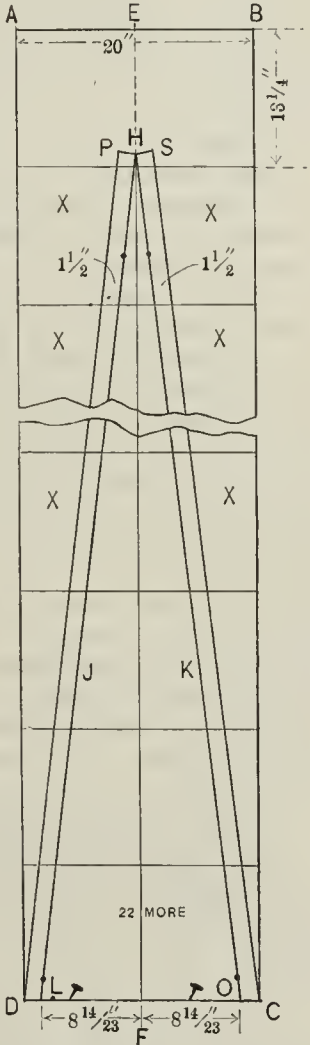


Fig. 5.—Obtaining Patterns for Standing Seam Strip

COVERING A CONICAL TOWER WITH SHEET METAL.

line just scribed as a guide, lay the following sheets, being careful to use the waste as the apex is reached. After having "knocked out" 22 of these strips and soldered same, the pattern is laid over each one and accurately marked, cut and bent up. It is then laid on the tower, fastened with cleats and double seamed with the hand seamer and mallet in the usual manner. If the tower was done in copper or galvanized sheet iron, where 8-foot material could be used, as many sheets would be locked together as required; then metal could be saved and waste avoided by cutting the sheets as shown in Fig. 6, in which A B C D shows the sheet of metal and E and F the pattern sheets, the only waste being shown by the shaded portion.

Where the finial sets over the tower, as at D in Fig. 1, the standing seams are turned over flat as much as is required to receive the finial, or small notches would be cut into the base of the finial as to allow it to slip over the standing seams. Before closing the standing seams take a brush and fill seams with white lead, then close up tight, which will make a good joint.

Tin Plate Imports.

The official returns of the British Board of Trade for September, 1901, show that 9455 tons of Welsh tin plates were shipped from British ports to the United States during the month, as compared with 8508 tons in the preceding month and 6925 tons in September, 1900. The total shipments of tin plates from Great Britain to this country in the nine months ending September, 1901, amounted to 50,824 tons, as against 46,176 tons for the corresponding period of last year. The increase in imports of tin plates into the United States this year is attributable to the strike in the domestic tin plate mills, which caused a temporary scarcity of American plates and forced some consumers to use the foreign product. It is not likely that this rate of increase will be maintained during the closing months of the year, as the American mills are again in operation and are making deliveries to their customers.

The official figures of the Bureau of Statistics of the Treasury Department, just issued, show that the imports of foreign tin plates into the United States for the first nine months of 1901 amounted to 113,441,883 pounds, valued at \$3,404,286, as compared with 113,571,584 pounds, valued at \$3,895,584, in the corresponding period of last year. Thus it will be seen that the imports for the two periods were almost exactly of similar amount. The imports of foreign tin plates into the United States in the first nine months of 1899 amounted to 96,279,433 pounds, showing a material growth in the last two years, due to the shutting down of the American mills on account of strikes.

A New Tin Plate Enterprise.

On October 31 there were incorporated under the laws of the State of New Jersey the International Tin Plate Corporation, with a nominal capital of \$100,000. The title of the corporation indicates their purpose to manufacture in Europe, the United States and Canada. H. Herbert Andrew, J.P., managing director of J. H. Andrew & Co., Limited (Toledo Steel Works), Sheffield, England, one of the largest makers of fine steels in Europe, represents the foreign interests of the corporation, which is indorsed by Lord Charles Beresford, who has inspected the system and is chairman of Mr. Andrew's English company. This corporation will operate under the inventions of Messrs. Andrew and Allis, known as the Allis-Andrew system, which is protected by numerous patents granted in the United States and abroad. The domestic affairs are looked after by their president, Thomas V. Allis of Bridgeport, Conn., where the system was developed.

Alan Wood Company Improvements.

A short time ago it was announced that the Alan Wood Company, sheet manufacturers, of Conshohocken, Pa., had purchased property adjoining their plant and would immediately erect a \$1,000,000 steel plant. We are informed by President Howard Wood of the company that this plan has been abandoned, but that the new works would be erected in Plymouth township, which is just outside of Conshohocken. Work will be commenced immediately on this site for the erection of a 400-ton open hearth steel plant, consisting of five 50-ton furnaces. Four of these furnaces will be used continuously, producing two heats a day, and one will be a "spare" furnace. Plans are now being prepared and the works will be erected as soon as the material can be delivered on the ground. It is expected that they will be in operation in the fall or winter of next year. The location is such that material can be received and the finished product shipped over either the Pennsylvania or the Reading railroad. The company have purchased property adjoining their present plant and it is expected that the iron mills there will be enlarged next year.

THE G. B. WEST COMPANY, Harrisburg, Pa., manufacturers of Corrugated Sheet Iron Ornaments, lost heavily by a fire last week. Their entire plant was destroyed, along with valuable machinery.

Death of William J. Gordon.

William J. Gordon, a well-known inventor and manufacturer of tin and sheet metal workers' tools and machinery, died suddenly on November 4 at his home, 2450 North Broad street, Philadelphia. He was born in Philadelphia on November 4, 1835, and learned the trade of a machinist in Norris' Locomotive Works. In 1864 he established himself in business at Front and New streets as a manufacturer of tin workers' tools, dies and presses. Subsequently he formed a partnership with H. B. Gilbert, under the firm name of Gordon & Gilbert. The firm dissolved eight years ago, since which time Mr. Gordon had carried on the business alone. He is said to have invented the first machine known for riveting buttons on clothing, and many of his devices for the manufacture of cans and other tinware, and corrugated rain pipes are used in all parts of the country. In all he is said to have patented 65 different mechanical contrivances. Mr. Gordon was well known in Masonic circles, having been a member of Perkins Lodge, No. 402, F. and A. M.; Philadelphia Chapter, No. 169, R. A. M.; and Philadelphia Commandery, No. 2, K. T. In his early manhood Mr. Gordon was married to Hannah M. Vasey, who, with a daughter, survives him.

FLASHINGS.

It is reported that an independent Tin Plate mill will shortly be erected at Lisbon, Ohio. Negotiations looking to the establishment of such an enterprise are going on, and it is said that the necessary capital has already been secured.

THE Pittsburgh papers say that the labor leaders of that city regret very much the resignation of President D. G. Reid and Vice-President Warner Arms of the American Tin Plate Company. These officials were both regarded as friendly to organized labor, especially Mr. Arms, who bears a reputation for open dealing with the men. He was always regarded as considerate of their welfare and conservative in his dealings with them in times of strikes. It is said that during all the time he was interested in independent plants, before entering the combine, he never had a strike and always showed himself to be in sympathy with the men employed in his mills.

CAPITALISTS of Cleveland, Ohio, are in correspondence with the Board of Trade at Ashland, Ky., relative to the proposed establishment of a Corrugated Metal Roofing plant in connection with the new Sheet mill that is being erected in that city.

THE BARTLETT STEEL COMPANY of Joplin, Mo., have been organized to take over the business of John L. Bartlett. The business of the company is that of jobbers in Structural Steel, Bar and Sheet Iron, Castings, &c., and their salesmen will cover the territory in South-western Missouri, Kansas, Arkansas, Indian Territory, Oklahoma and Texas. The officers of the company are: E. O. Bartlett, president; John W. Harris, vice-president; Jerome B. Grigg, treasurer, and John L. Bartlett, secretary.

S. L. HINCHCLIFFE, New Britain, Conn., has a contract for tinsmithing on the new East Main Street School Building, and on a block of buildings for W. S. Bradley in that city.

JOHN THOMAS, formerly a roller at the mill of the Republic Iron Company on the South Side, Pittsburgh, has gone to Waukesha, Wis., with a force of 40 men to start the new independent Sheet mill at that place. Nearly all the men came from Chartiers, Pa., and were formerly employed at the Sheet mill in that town, which has been moved to Leechburg.

H. WEISS & Co., 20 Cliff street, New York, are sending to the trade a 32-page catalogue devoted to the Niagara Tinsmiths' Tools and Machines. The firm carry in stock, ready for prompt shipment, all the machinery necessary for equipping a tin shop or cornice maker's shop. The catalogue shows Tin Folders of various designs; Burring and Turning Machines, Beaders, Setting Down Machines and Crimpers, all adapted for use in an

adjustable bench standard that can be attached to any work bench. Forming Rolls and Stove Pipe Formers are also shown. One page is devoted to a variety of Tinners' Stakes, made of wrought iron with steel faces. Bench Plates, Bench Shears, Hand Snips, Slitting Shears and Pipe Cutting Shears are followed by Raising Hammers, Scratch Awls, Rivet Sets and Headers, Groovers, Chisels and Hollow Punches. Roofing Tools and Fire Pots are also shown, as well as Gutter Beaders, Circular Shears and different styles of Squaring Shears, Lever Shears and Punches. The catalogue also shows Power Presses and Cornice Brakes.

THE AMERICAN CAN COMPANY have purchased the Loyhed Tinware Company of Seattle, Wash. The Can company now own factories on the Pacific Coast at San Francisco, Los Angeles, Astoria, Fairhaven and Seattle.

SEVERAL important changes have recently been made in the management of the Mossberg & Granville Mfg. Company, Providence, R. I. At the recent election the following, who have not heretofore been associated in the management, were made directors: W. W. Orr, V. I. Cunnock, E. C. Moen, A. R. Whitney, Jr., and Joseph W. Harriman, all of New York, and Elisha H. Howard of Providence. The Board of Directors organized by electing Howard C. Smith of New York, president; Elisha H. Howard, vice-president, and E. C. Moen, secretary and treasurer. V. I. Cunnock was made chairman of the Executive Committee. The resignation of W. W. Gibbs, for some time past general manager, was accepted and in his place George A. Clark, formerly of Lowell, Mass., has been appointed. The business of the company at the present time is in a flourishing condition, and various new patterns of Tools and Machines have been added to their already very extensive catalogue. The New York office of the company is at 100 William street.

THE AMERICAN CAN COMPANY, 21 State street, New York City, are about to make many improvements to their plants in Baltimore, Md. The factory of the R. Tynes Smith Company is to be made one story higher and modern machinery installed, and a large warehouse will be erected at the works of the Norton Tin Plate & Can Company.

E. VAN NOORDEN COMPANY, Boston, Mass., are building 500 Single Pitch Galvanized Iron Skylights, about 8 feet square, for the Atlas Tack Company, Fairhaven, Mass. They are also at work on an order for about half of that quantity for the Soule mill at New Bedford, Mass.

THE ALEXANDER MFG. COMPANY, Canonsburg, Pa., are erecting a plant for the manufacture of the Acme Stove Pipe Elbows and Drip Pans. The company have a capital stock of \$12,000.

ACCORDING to the *Iron and Coal Trades Review* of London, the Tin Plate industry was first introduced into Wales by Capel Hanbury, who in early life had traveled in Norway and Sweden, where it was then in a more advanced stage than in England. The method of rolling Iron into large Plates which were used for roofing houses had been in existence in those countries for some time. Rolling mills were then in existence in Wales, but they were not of the kind used in Norway. On the return of Mr. Hanbury to England he leased a large tract of land at Pontypool, in South Wales, for a term of 99 years, and set up rolling mills in connection with his furnaces. These mills were an improvement on those of Norway, rolling Plates much thinner than the Norwegian Plates. In time the Black Plates were introduced and then coated with tin, which marked the genesis of the Welsh Tin Plate trade. Mr. Hanbury is said to have been the first maker of Tin Plates in Wales.

United States Consul Hill of Amsterdam, Holland, reports that the project of draining the Zuider Zee has been withdrawn from the States-General by the new ministry, thus being disposed of probably for a long period. The state of the Dutch budget renders such an undertaking at this time unadvisable; besides, the fall in the price of land has diminished the demand for new agricultural holdings.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

CONSTRUCTING A CHURCH FURNACE.

From F. G., Detroit, Mich.—I have read the request for assistance made by "A. S." in *The Metal Worker* of November 2 and am of the opinion that he will save little money by endeavoring to utilize his box stove for the hot air furnace in the church. He would be better off if he purchased from some manufacturer a furnace having a capacity sufficient for the purpose. He does not give the points of the compass of his church, which are very important in locating a furnace for heating. If the pulpit is in the north or the west end the furnace may be located almost directly under it, and have a 24 x 36 register placed in the floor in front of the pulpit, connected with the furnace by means of a 24-inch pipe; or two 16 x 20 inch registers may be used, connected with the furnace by means of two 16-inch pipes. All of these pipes should have tight dampers in them if the furnace is to heat the basement. Tight dampers, however, if they do not receive the proper attention, may lead to burning out the furnace under some conditions.

For heating the basement an opening should be left in the hot air pipe of a size equal to its full capacity. This opening can be covered by means of a suitable door. The cold air supply for the furnace can be arranged so as to take it from out of doors, from the church floor and from the Sunday school room. In any case the cold air ducts should not be larger than 24 inches in diameter, or 20 x 22 inches square. The cold air register or registers may be placed in the church floor beside the hot air registers. This will exhaust the cold air from the floor of the church and take it down to the furnace to be heated and sent back, to facilitate the heating of the church before the congregation assembles. This exhaust pipe should have a tight damper in it, which should connect with the cold air pipe from out of doors. This also should have a tight damper in it, to close it when the air has been taken from the church. Just before these two cold air pipes connect with the furnace a door should be put in the side, having an area equal to that of the pipe. Then when the Sunday school is to be heated the cold air will be taken from the floor, passed through the furnace and discharged through the door opening into the hot air pipe.

Some difficulties are presented in the heating on account of the flues. If, however, they have a strong draft and the pipe connections are carefully made, so as to prevent the cold air from coming down one chimney and going through the furnace around and up the other, two chimneys may be used without disadvantage. If the draft is strong some additional heating surface can be put within the brick chamber by running an 8-inch elbow up from the top of the box stove and carrying a pipe 8 inches in size horizontally above the stove to the front of the brick chamber. Here a tee should be placed, tapering into two 6-inch outlets, and one of these 6-inch pipes should be run back on each side of the hot air chamber, carried through the wall of the furnace and attached to the smoke pipe connected with the flue. By this means either 6 or 8 inch pipes may be used and a considerable additional heat derived to aid the box stove in doing the heating. If the elbow which rises from the collar at the back of the stove connects with each of these side pipes in the chamber a more direct draft can be secured when the fire is started. But a tight damper should be placed in each of the connections, so as to force the indirect draft when desired.

From R. N., North Dakota.—In reply to the request of "A. S." in *The Metal Worker* of November 2 I offer a few suggestions on the construction of the furnace for heating his church or for the utilization of his box stove.

From descriptions of successful hot air furnace plants which have appeared in *The Metal Worker* it is very clear that the amount of surface which the furnace must expose to heat the air that is to maintain the church at a comfortable temperature depends almost entirely on the surface the church exposes. The dimensions of the building are given as 30 x 50 feet, with a 14-foot ceiling. It is a simple matter to find from these dimensions that the outer wall of the church would expose a surface of 2240 square feet and the building would contain 21,000 cubic feet of space. To heat this amount of air and to supply the heat that would be lost through the wall and glass surface a given amount of surface must be provided in the box stove. If the wall surface is reduced to a surface equivalent to glass in its heat losing power by dividing the amount by ten, it would give 224 square feet of equivalent glass surface.

As the box stove will use wood for fuel it can be safely relied upon to maintain its surface at as high a temperature as is desirable in a furnace for warming air. Under the circumstances I would calculate that 1 square foot of surface in such a furnace would take care of 4 square feet of equivalent glass surface. This would make it necessary to provide between 50 and 60 square feet of surface in the box stove and the pipe leading from it that might run around the brick chamber which incloses it. In house heating 1 square foot of heating surface will take care of about 250 cubic feet of space, but in a church it will take care of more space. If it is estimated that 1 square foot of heating surface in the furnace will heat 400 cubic feet of air in such a building, it can be readily seen that the box stove used must have something over 50 square feet of surface. Virtually the sides and back of the stove will be all that there is available as heating surface, and as the box stove is 5 feet long, it is probably 3 feet high, which would give 15 square feet of surface for each side and 6 feet of surface in the back, or 36 square feet of surface in the stove proper, as the top is of little use for heating air. If an 8-inch pipe is run up from the stove and around the chamber at least 10 lineal feet of smoke pipe would be used, exposing a surface of 20 square feet. This, in addition to the surface exposed in the stove, will probably bring the surface up to the amount necessary according to my figures.

I have calculated some of my heating work along similar lines to that presented, but if my figuring is not borne out by the experience of others I should be glad to have them point out its defects and suggest the changes that I should make. This will, I am satisfied, be of interest to "F. G.," as well as an advantage to me, and possibly to many other furnacemen.

The brick chamber used in inclosing the stove should have its walls not over 4 inches away from the stove at the projecting parts of the stove. This will give an air space at the most restricted point having an area of over 600 square inches through which the air may rise to the hot air pipes and enough to fill four 14-inch pipes or a less number of larger pipes.

SIZE OF RADIATORS AND VENTILATORS.

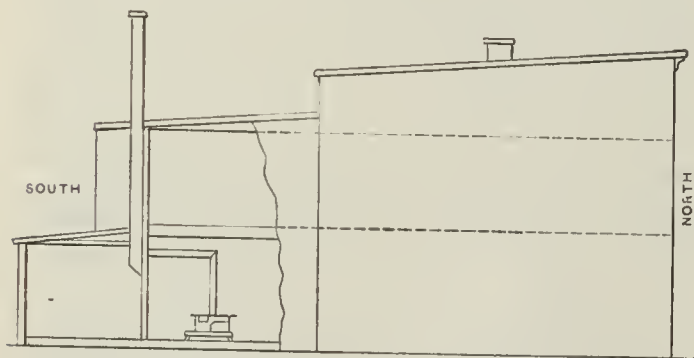
From Y. I., Carbondale, Pa.—I have a room to heat and ventilate in a private hospital which contains 8400 cubic feet of space. It is located on the second floor and is to be heated by low pressure steam by means of direct-indirect radiators. I want to know how many square feet of radiating surface should be supplied to do the work, and also what should be the size of the openings under the windows to supply the fresh air to the four radiators to be placed in the room? What sized outlet should the room have to ventilate it? Should the ventilating flue run to the ventilator in the attic be heated by a steam coil to draw off the foul air? In case the ventilator is aided by the steam coil, is it necessary to reduce the size of the ventilator in the roof and make the smaller ventilating pipe or pipes connect with it?

Note.—We shall be glad if any of our readers who have had experience in similar work will give their views

as to the number and size of radiators that should be used for this work. It is probable that more information would be desirable in order to treat this problem satisfactorily. If the room is just under the roof and exposed on three sides more radiation would be required than if it were only exposed on one side and had another story above it. For a room of this character, if 1 square foot of radiation is provided for every 50 cubic feet of space, 170 square feet of direct radiation would be required. Indirect radiation, however, owing to the fact that it has to warm fresh air from out of doors, is apportioned on a basis 25 per cent. greater than for direct radiation; therefore, if indirect radiators were used, the surface should be not less than 215 square feet. Owing to the fact that a ventilating flue is to be provided, and in a hospital building, it is well to provide for a frequent change of air. It would be desirable to provide 250 square feet of surface in the radiators, and if four radiators were used, each radiator should present a surface of not less than 60 square feet. The size of the air inlets to the radiators would be governed somewhat by the number of times per hour the air has to be changed. Under ordinary circumstances, if each of the 60-foot radiators were supplied with air to fill an opening $2\frac{1}{2} \times 12$ inches or 3×12 inches, a sufficient volume of fresh air would be supplied. If more ventilation is desired, the supply would be based on $\frac{3}{4}$ square inch area in the air inlet duct for each square foot of surface in the radiator. The openings to the ventilating flues should have an area equal to the combined area of the cold air inlets. The registers should be placed near the floor and a steam coil in the ventilator. If a steam coil is placed in the ventilator, neither the main ventilator nor the branches into it should be reduced in size. The steam coil should be used if possible, as it will create a positive exhaust current.

TROUBLE WITH A CHIMNEY.

From W. M. B., York, Pa.—Will *The Metal Worker* or some of its readers give me some information that will aid me in overcoming the trouble with the chimney



Trouble with a Chimney.

shown in the accompanying sketch? This chimney will not draw as it should. It has now been raised twice, so that it is 18 inches higher than the front mansard roof, yet there is still trouble with the range which is connected with it. The chimney is on the outside wall on the west side of the house and is 9×9 inches in size. Thinking that perhaps the trouble might have been in the range that was used, another range was connected with it, but with no better results. I should be glad to know what is the probable cause of the trouble and what I may do to overcome it.

Note.—Many of *The Metal Worker's* readers have had experience with similar troubles and can doubtless suggest something that will be of benefit. In the meantime we would suggest that the range be connected with the chimney by a pipe the full size of the collar and not less than 6 inches in diameter. At the point where the stove pipe connects with the chimney care should be taken to see that it is as near air tight as possible all around and that the pipe does not extend so far into the chimney as to cut off the draft. The chimney should be examined to see if the mortar has fallen away from the

bricks so as to allow the air to enter it without passing through the fire. There is one important principle to be observed, and that is to see that no air goes out of the top of the chimney except that which goes in through the draft slide in the ash pit of the range.

If this chimney is more troublesome when the wind blows, it is probable that it is still not high enough to escape the influence of the air currents striking on the other parts of the building. Not infrequently, however, similar trouble may be caused by the wind currents blowing across the top of a higher story at a distance. When the air, after passing over the higher story, takes a downward turn on reaching the lower part of a building, it is liable to cause a downward air pressure on the top of a chimney some distance away. If the trouble comes when the wind is blowing hard a chimney cap may help to avoid it. If, however, the main trouble is experienced when there is but little wind, the provision of a larger smoke pipe with a perfectly tight chimney connection and the cementing of all of the joints between the bricks of the chimney will be necessary. If this does not accomplish the desired result it is probable that the chimney will have to be still further increased in height.

TRADE NOTES.

THE JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J., have just made a shipment to their San Francisco branch of 14 double truck loads of their Graphite productions, having a total weight of 85,000 pounds.

A FIRE occurred in the shop of the Garden City Nickel Plate Works, at 253 Canal street, Chicago, on October 27, which did damage to the extent of \$2000.

THE ASHLAND EMERY & CORUNDUM COMPANY, incorporated recently in New Jersey with a capital stock of \$3,000,000, represent a combination composed of the Ashland Mills Emery Company of Perth Amboy, N. J.; the Diamond Mills Emery Company of Philadelphia, the Jackson Mills Emery Company of Easton, Pa.; the Walpole Emery Mills of South Walpole, Mass.; the Hampden Emery Mills of Chester, Mass., and the Levant Emery Company. The combined corporation own Emery mines in Chester, Mass., and Peekskill, N. Y. It is said that the output of the concern will amount to about 12,000 tons of crushed imported Emery, 5000 tons of native Ore and 2000 tons of Corundum.

WE have received from the Pneumatic Tool Company, 632-640 Monadnock Block, Chicago, Ill., a copy of their catalogue No. 15, just issued, which is claimed to be the most complete catalogue of Pneumatic Appliances ever published. A feature of the catalogue is a number of excellent half-tone engravings showing the company's tools in operation. These cuts, they advise us, are made from photographs taken from important buildings and other structural work on which the company's tools have been used. They call attention to the fact that they were awarded the only gold medal for Pneumatic Tools, and also a silver medal for their exhibit at the Pan-American Exposition, at Buffalo. The tools shown include Riveting Hammers, Calking and Chipping Hammers, Riveters, Air Drills, Boring Machines, Painting Machines, Compressed Air Hoists, Pneumatic Cranes, Air Compressors, &c.

THE foundations for the two largest buildings for the new plant of the New Castle Stamping Works, New Castle, Pa., have been finished and the brick work has been started. The buildings will be large structures and work will be pushed as fast as possible.

THE Solder manufacturing plant of E. M. Lang & Co., at Eastport, Maine, was destroyed by fire on October 25, involving a loss of \$3500. We are advised by the company that they will rebuild the plant without delay.

For polishing aluminum an English contemporary recommends either rum and olive oil, a paste made of fine emery and tallow or an application of chalk and rouge.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and weak, but without change in price.
Copper prices are unchanged; demand is slow and spot Copper scarce.
Pig Lead is inactive, but firm.
Spelter is quiet and strong.
Antimony is unchanged.
Nickel continues firm.
Aluminum is active and unchanged.
Tin Plates are in good demand, with spot in scarce supply; jobbers' prices for Cokes are down 25c. a box.
Sheets are still in active demand and scarce, with prices strong.
Old Metals are rather more active, but prices are unchanged.
Sheet Copper is active and firm.
Foundry Iron is strong, with large demand and upward tendency.
Hardware continues in good demand, with prices well maintained.
Plumbers' Supplies are moving in good volume and prices are strong in all lines.
Wrought Iron Pipe prices are firm, and scarcity of heating sizes continues.
Malleable Iron Fittings, Class A, have been advanced 10c. per lb. on list.
Stove Pipe is very active and firm in price.
Wire Nails are in good demand, but prices are irregular and slightly lower.
Cut Nail manufacturers reaffirmed prices.
Wire is active and unchanged.
Window Glass in small sizes is lower in price.
White Lead prices are being cut to some extent.
Spirits Turpentine is ½c. a gallon lower.
Linseed Oil prices are irregular; demand active for small lots.
Manila Rope has advanced 1c. a lb.

METAL MARKET.

NEW YORK, November 8, 1901.

Pig Tin.—The market for Pig Tin has been dull and uneventful during the week under review. The amount of business transacted for consumptive account was very small, consumers limiting their purchases to what they need for immediate use. Speculative interest has also been dormant. Prices have sagged throughout the entire week and the market closed dull and weak. Straits Pig in small lots is quoted at 25½c. to 26c. per lb. According to the October statistics computed by the New York Metal Exchange, the total visible supply of Tin on October 31 was 194 tons above that of October 31 of last year.

Copper.—Owing to the fact that no actual developments have yet occurred, interest in the situation is acute. Consumers are more cautious than ever, with the result that very little metal is changing hands. The impression seems to be increasing in the trade that the present prices cannot be maintained very much longer, notwithstanding that leading interests in the Copper market assert that there will be no decline this side of January. Spot Copper is still scarce and prices so far have been strictly maintained. Lake Ingot in small lots is quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper keeps up in good volume and the mills are turning out a considerable product, which is said to be going into consump-

tion nearly as fast as made. Prices are firm, Sheet Copper from store being quoted on the basis of 21c. per lb.

Pig Lead.—The market for Pig Lead continues quiet but steady. Consumers are buying little beyond the limits of their current needs. American Pig in small lots is quoted at 4.62½c. to 4¾c. per lb. It is reported that a meeting of producers of Lead has been called for November 25 in New York City, to discuss the question of prices and production. The matter of curtailing the output will, it is said, be brought up, as there is now a considerable surplus of Lead on hand. St. Louis advices report that the Pig Lead market continues on the same basis as reported last week, both as to demand and price.

Spelter.—The market remains quiet but firm, owing to a continued scarcity of spot stock. Prices are unchanged from those given in our last report, good Western brands in small lots being quoted at 4.55c. to 4.60c. per lb. St. Louis advices report a good demand and no change in prices during the week.

Sheet Zinc.—The demand for Sheet Zinc is of ordinary type, and prices are without change, jobbers quoting 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7c.

Antimony.—No change has taken place in this metal, for which the demand is of fair proportions. Cookson's in small parcels is quoted at 10½c. to 11c., and Hallett's 8¼c. to 9c. per lb.

Nickel—Is unchanged, prices continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—An active demand for Aluminum continues, and prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—The situation in Tin Plates is unchanged and the market shows no features of special interest. The demand is about of the average amount for the season of the year and includes all classes of Plates. Deliveries on back orders are coming in slowly and the stringency which prevailed for some time past is gradually disappearing. The demand in this market is confined mainly to small purchases for immediate use. The American Tin Plate Company are selling up to the end of the first quarter of next year at prices prevailing for some time past. Jobbers' prices for small lots of American Bessemer Coke Plates, IC, 14 x 20, in New York or corresponding points rule about 25c. per box lower, at \$6 to \$6.50 per box, IX being quoted at \$7 to \$7.50.

Sheets.—The demand for Sheets is still very active and deliveries are about as hard to get as at any time during the year. The mills are still from two to three months behind on orders. Prices continue quite firm, jobbers quoting No. 27 One Pass Cold Rolled Soft Steel Sheets at about 4.15c., and Galvanized at 65 to 67½ per cent. off the list.

Chicago advices are as follows: Steady progress is made toward a resumption of normal quotations on Sheets from store because of more generous receipts. The latter, however, do not include all sizes and for some sizes there is continued scarcity. No. 27 Common is now selling at 3.50c. to 3.75c. Galvanized also is slightly lower, quotations ranging from 65 and 10 to 70. Tin Plates are arriving somewhat more freely and famine prices are slowly receding.

Old Metals.—A rather more active demand for Old Metals is noted, particularly for Scrap Iron, but prices have not advanced. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14¾c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¾c.
Light Brass.....	per lb. 7¼c.

Lead	per lb.	4 c.
Tea Lead.....	per lb.	3 1/2 c.
Zinc	per lb.	2 3/4 c.
No. 1 Pewter.....	per lb.	17 1/2 c.
No. 2 Pewter.....	per lb.	8 1/2 c.
Tin Plate Scrap, per gross ton.....		\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....		10.50 to 11.00
Heavy Cast Scrap, per gross ton.....		10.25 to 10.50
Stove Plate Scrap, per gross ton.....		7.25 to 7.50
Burnt Iron, per gross ton.....		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—From present appearances the usual dullness during the closing months of the year will not be felt at this time. All sales agencies report the demand sufficient to keep furnace stocks very low. That consumers also have little stock on hand is shown by the constant pressure for prompt delivery. The nearby furnace companies, who usually carry considerable Iron on hand, are all reporting themselves practically bare of stocks. We quote: No. 1, \$16 to \$17.50; No. 2 X, \$15.15 to \$15.75; No. 2 Plain, \$14.65 to \$15; Tennessee and Alabama brands, No. 1 Foundry, \$15.50 to \$15.75; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$15.50 to \$15.75; No. 2 Soft, \$14.75 to \$15; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—The number of inquiries for deliveries of Pig Iron up to next summer is large and many of them are being closed. The business is shared by the Northern and Southern furnacemen alike, the orders being for approximately 1000 tons each. The trade in small lots is equally satisfactory. There is an absence of large orders, all the heavy consumers apparently having bought for some time ahead. Makers are well stocked with orders and the temper of the market is strong. Prices are unchanged, as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.25 to 16.00
Local Coke Foundry, No. 2.....	14.75 to 15.25
Local Coke Foundry, No. 3.....	14.25 to 14.75
Local Scotch, No. 1.....	15.25 to 16.00
Ohio Strong Softeners, No. 1.....	17.00 to 17.50
Southern Silvery, according to Silicon.	15.65 to 16.00
Southern Coke, No. 1.....	15.15 to 15.40
Southern Coke, No. 2.....	14.40 to 14.65
Southern Coke, No. 3.....	13.90 to 14.15
Southern Coke, No. 1 Soft.....	15.15 to 15.40
Southern Coke, No. 2 Soft.....	14.40 to 14.65

PHILADELPHIA.—A very strong market is reported on all sides. Most of the business is for short deliveries, but something is being done for the first half of this year. Prices for the first mentioned are firm and at full or slightly higher figures, while for the longer dates the average is about 25 cents per ton less. There is considerable diversity in price, however. Some makers are disposed to take advantage of the scarcity to get a little more money out of needy buyers, while others appear satisfied to go along at unchanged prices. Sales have been on a fairly large scale and Foundry Iron is moving at unchanged prices. There is a scarcity of good Iron for prompt shipment and the tone of the market is decidedly strong, at figures within the following range for Philadelphia and nearby points, and 25c. to 50c. less for deliveries within a radius of 100 miles south or west: No. 1 X Foundry, \$15.75 to \$16; No. 2 X Foundry, \$15.25 to \$15.50, and No. 2 Plain, \$14.75 to \$15.

PITTSBURGH.—The Pig Iron market is as strong as it possibly could be, and it has been made stronger by the fact that some of the blast furnaces have been compelled to bank for two or three days at a time, owing to the scarcity of Coke. The situation as regards the supply of Coke is serious and it seems to be getting worse. Foundry Iron is scarce for prompt shipment and is bringing good prices. We quote Bessemer Iron in small lots at \$16.15 to \$16.25; No. 1 Foundry at \$15.50 to \$16, and No. 2 at \$15 to \$15.50, all f.o.b. Pittsburgh.

CINCINNATI.—The history of the past week's business in the Pig Iron market is almost an exact duplication of what has been recorded each succeeding week for the last six. Furnaces are well sold up for the first quarter of next year. This is especially the case in regard to No. 4 Foundry Iron. A very large tonnage has also been placed for the second quarter deliveries. There is to-day practically but one scale of prices, and this is essentially so in Southern Irons. The market is steady and extremely satisfactory, and bids fair to so continue for

some time. The scarcity of cars for Coke and Iron shipments is very exasperating, and the only ameliorating condition is that no favorites are being played. We quote f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$14.25
Southern Coke, No. 2.....	to 13.75
Southern Coke, No. 3.....	to 13.25
Southern Coke, No. 4.....	to 12.75
Southern Coke, No. 1 Soft.....	to 14.25
Southern Coke, No. 2 Soft.....	to 13.75
Southern Coke, Gray Forge.....	to 12.75
Southern Coke, Mottled.....	to 12.75
Ohio Silvery, No. 1.....	\$15.10 to 15.60
Ohio Silvery, No. 2.....	14.60 to 15.10
Lake Superior Coke, No. 1.....	15.10 to 15.60
Lake Superior Coke, No. 2.....	14.60 to 15.35
Lake Superior Coke, No. 3.....	14.10 to 14.85

ST. LOUIS.—The market for Pig Iron is still controlled by the same influences as last reported, and a large and satisfactory volume of sales and inquiries can be noted. Several furnaces are practically out of the market for the first half of 1902. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$14.75 to \$15.00
Southern, No. 2 Foundry.....	14.00 to 14.25
Southern, No. 3 Foundry.....	13.50 to 13.75
Southern, No. 4 Foundry.....	13.00 to 13.25
No. 1 Soft.....	14.50 to 14.75
No. 2 Soft.....	14.00 to 14.50

THE HARDWARE TRADE.

The record made by the last month was, on the whole, very satisfactory. Not only was the volume of business good, but prices were, on the whole, quite well maintained. Weakness in a few lines which, owing to special reasons, developed lower prices is not to be taken as indicating the condition of the market as a whole, which is feeling constantly the effect of the large volume of trade and the strength in the price of the raw material. The condition of the iron market is such as to exert a steady influence on the values of the manufactured products. The matter of labor must not be overlooked as an element in the cost of goods. While there is no general advance in wages, in nearly all factories there has been a tendency in this direction, as individual advances have been made which, though not important in themselves, make in the aggregate a perceptible addition to the cost in producing the goods. The scarcity in several lines contributes to the general strength of the market and causes more or less inconvenience to the trade.

NOTES ON PRICES.

Wrought Iron Pipe.—The Wrought Iron Pipe situation continues unchanged and is likely to so continue, according to all reports, until March or April of next year. A small item in a New York daily of last Saturday gave a report from Pittsburgh to the effect that independent producers of Pipe and Tubing had made a cut of 5 per cent. below the prices of the National Tube Company on orders for immediate delivery. This report, on investigation, appears to be absolutely without foundation in fact. There is no independent mill in position to make a cut of 5 per cent. below the National Tube Company's prices for the reason that the entire product of the independent mills up to the first of the year is already sold at prices equal to those quoted by the National Tube Company. It is understood that none of the independent mills have any Pipe whatever that they can deliver promptly, and there is no likelihood of their having any surplus stock that will not be used on orders now in hand much before the latter part of January or the beginning of February. The consumption of Pipe is just as active to-day as it has been at any period during the past two years. There is still a scarcity of some sizes of Pipe, and with this condition there appears to be no reason for a decline in the mill prices. The mill price of Wrought Iron Pipe, according to good authorities in the trade, will not change before April or May, 1902. The reason given for this opinion is that the National Tube Company's product is sold up to that period, and all the sales have been made at prices which have been in effect since September of last year. The independent mills, it is argued, are not in a position to make prices, as none of the new mills having a sufficient ca-

capacity to seriously affect the National Tube Company will be in operation before April, 1902, and until the product of an independent concern having sufficient means and determination to force itself into a leading position is in the market and that concern is ready to take up the fight with the National Tube Company, the latter will continue masters of the situation.

Malleable Iron Fittings.—Under date of November 6, 1901, the manufacturers of Malleable Iron Fittings advanced the list price of Malleable Class A Iron Fittings 10 cents per pound. The list prices now are:

Malleable Fittings, Black, per pound.....40c.
Malleable Fittings, Galvanized, per pound.....50c.

These prices are subject to the regular discounts. The following is a list of Fittings comprised in Class A:

Elbows1/8, 1/4 x 1/8, 3/8 x 1/8 inch
Tees1/8, 1/8 x 1/4, 3/8 x 1/8 inch
R. & L. Couplings.....1/8 inch
Couplings, R. H.....1/8 inch
Ells, R. & L.....1/4 and 3/8 inch
R. & L. Return Bends.....3/8 and 1/2 inch

Nipples.—The Steam Goods supply houses notified the trade that Nipples longer than 6-inch are not kept in stock, but are cut to order only. Prices will be based on the price of Pipe, with charges for cutting and threading added. List prices of Extra Heavy Nipples will be three times the list of regular Nipples.

Asbestos Air Cell Coverings.—F. J. Gast, 26 Cortlandt street, New York, manufacturer of Asbestos Air Cell Coverings for hot air furnace pipe, furnaces, steam pipe, boilers, &c., quotes the following discounts from the list given below on the three classes of these Coverings which he is manufacturing:

	Discount.
Class A, 1 inch thick, for high pressure.....	50 %
Class B, 3/4 inch thick, for low pressure.....	60 %
Class C, 1/2 inch thick, for hot water.....	65 %

Inside diam- eter of Pipe.	Per lin. ft., canvas jacketed.	Elbows 90°—45°.	Tees. Valves.	Crosses.
1/2 inch.....	15c.	16c.	24c.	28c.
3/4 inch.....	16c.	20c.	26c.	34c.
1 inch.....	18c.	20c.	26c.	34c.
1 1/4 inch.....	20c.	20c.	26c.	34c.
1 1/2 inch.....	22c.	20c.	26c.	34c.
2 inch.....	24c.	22c.	29c.	38c.
2 1/2 inch.....	27c.	25c.	33c.	42c.
3 inch.....	30c.	29c.	38c.	48c.
3 1/2 inch.....	34c.	32c.	42c.	54c.
4 inch.....	38c.	35c.	47c.	60c.
4 1/2 inch.....	42c.	40c.	52c.	64c.
5 inch.....	46c.	46c.	60c.	72c.
6 inch.....	50c.	52c.	72c.	80c.
7 inch.....	55c.	66c.	96c.	88c.
8 inch.....	60c.	80c.	108c.	96c.
9 inch.....	65c.	88c.	120c.	108c.
10 inch.....	75c.	100c.	140c.	120c.
12 inch.....	90c.	140c.	175c.	150c.

Gast's Asbestos Air Cell Boiler Blocks and Boards are sold from the following list, which is subject to a discount of 50 per cent.:

	Per square foot.
1/2 inch thick.....	12c.
1 inch thick.....	24c.
1 1/2 inch thick.....	36c.
2 inch thick.....	48c.

His Asbestos Standard Cement is sold at \$4 per bag, and his Special at \$3 per bag, both subject to a discount of 50 per cent. Pipe Covering in the form of rolls 1/4 inch thick, 36 inches wide, and containing 250 square feet, for furnacemen and others, is sold at \$10 per roll, subject to a discount of 50 per cent.

Stove Pipe.—The advent of a cold snap has stimulated the demand for Stove Pipe to a marked extent. Orders for Stove Pipe have been coming in from all quarters throughout the week and dealers in this class of goods are seeing their stocks rapidly becoming depleted. Prices are firm, but no higher than for some time past.

Wire Nails.—While the volume of Wire Nails required to supply the demands of the trade is large, buyers are placing orders on a conservative scale. It is evident that competition is having a weakening effect upon the mar-

ket and concessions are being made of from 10 to 15 cents per keg in some cases. At the same time a large amount of business is being done at the regular quotations. The demand for Wire Nails in New York continues at about the average of the last few weeks. The market is rather weak for small lots at store, at \$2.45 to \$2.50 per keg.

Cut Nails.—The Cut Nail Manufacturers' Association, at a meeting held last week, reaffirmed former prices for the month of November. The tone of the local Cut Nail market remains unchanged. Steel Cut Nails are still scarce. Small lots from store are quoted at \$2.18 to \$2.30 per keg.

Wire.—A good seasonable demand for Wire continues, and it is heavier than usual at this time of year. There is some shading in the price of Plain Wire for good orders and for certain points of shipment. Plain Wire in small lots at New York is quoted at 2.00 cents, and Galvanized at 3 cents.

Window Glass.—Representatives of the Window Glass combines and the Executive Committee of the National Window Glass Jobbers' Association recently held a meeting at which the manufacturers agreed to sell members of the association small Glass at a considerable reduction from former prices. This action was foreshadowed by the arrangement, to which we referred last week, by which the members of the Jobbers' Association were permitted to use their discretion in making prices low enough to meet foreign competition. Local quotations are unchanged, at 80 and 20 per cent. discount for less than car lots from store.

White Lead.—The market for White Lead in Oil is reported to be in a somewhat demoralized condition, owing to the cutting of prices in the West having spread to the East. Concessions from regular quotations of from 1/4 to 1/2 cent per pound on some brands are said to be obtainable. White Lead in Oil is quoted here in a retail way at 7 to 7 1/4 cents per pound.

Linseed Oil.—During the week out of town Raw Oil dropped in price, causing the price of City Raw with those concerns who have Oil to be reduced from 4 to 5 cents per gallon. Others who have little Oil to dispose of, however, still continue to quote at last week's figures. Thus, the current range of prices is wide. City Raw Oil in moderate sized lots is now quoted at from 62 to 66 cents per gallon. The demand is quite active for small lots. On a declining market it is not expected that more than enough Oil to supply urgent requirements will be purchased.

Spirits Turpentine.—The market for Turpentine has not gained in strength during the week. The local demand has been restricted to small lots. This light demand, with a somewhat easier feeling in the Southern market, has caused a falling off in price of 1/2 cent per gallon. Retail quotations are now 38 1/2 to 39 cents per gallon.

Lawn Mowers.—Manufacturers of Lawn Mowers are sending out their price-lists for next season, which are practically the same as those ruling this year.

Manila Rope.—A further advance of 1 cent in Manila Rope was made this week, making the basis 13 cents a pound.

Window and Door Screens.—The manufacturers of Window and Door Screens have announced their prices for next spring. They show little or no variation from those prevailing in the past season.

American Exhibition, Crystal Palace, London.

Preparatory work is now being done for an American Exhibition, to be held in the Crystal Palace, London, England, May to September, 1902. It will be distinctly American, and is designed to demonstrate the immense commercial development which has taken place in the United States during recent years in American products, arts, industries and inventions. The time chosen will enable intending exhibitors to get their products before

probably the greatest assemblage of visitors from the English colonies from all over the world ever gathered in London, the magnet being King Edward's coronation ceremonies, which will occur in June next. The Advisory Committee contains the names of many well-known men, both English and American, including the Lord Mayor of London. The Commissioner for the United States is Alfred H. Post of the Anglo-Saxon Shipping Company, Produce Exchange Building, New York, from whom plans and particulars concerning space can be obtained. The Crystal Palace contains 150,000 square feet of space for exhibits, there being 200 acres of ground in all, of which the building covers 16 acres.

Corrugated Galvanized Iron and Steel Duty.

The United States Treasury Department has made the following ruling on a case submitted by the Collector of Customs at San Juan, P. R.:

"The Department duly received your letter, dated June 11 last, concerning an apparent conflict between the decision of the Department, dated April 1, 1901 (T. D. 22,929), and an unpublished decision of the Board of United States General Appraisers, in a case which arose at your port, concerning the classification of corrugated galvanized iron sheets, valued at more than 3 cents per pound.

"The Department is in receipt from the Board of a copy of the decision in the matter of the protest of Palacios & Co., referred to by you, from which it appears that the merchandise was assessed for duty at 12-10 cents per pound under paragraph 135, and two-tenths of 1 cent per pound additional in accordance with the provisions of paragraph 132 of the tariff act of July 24, 1897. The importers claimed that the same was properly dutiable at the rates provided in paragraphs 131 and 132, respectively, of said act.

"It is manifest that, as the sheets were valued at more than 3 cents per pound, they were excluded from classification under said paragraph 131, which provides for sheets of similar character, 'valued at 3 cents per pound or less,' and the Board so held in overruling the protest and affirming the assessment of duty.

"The merchandise in the case was entered on June 22, 1900, a date long anterior to the date of the Department's decision above alluded to, although the decision of the Board was rendered May 28, 1901.

"You are, therefore, hereby instructed to assess duty on galvanized iron sheets, corrugated or crimped, when valued at more than 3 cents per pound, at 45 per cent. ad valorem under paragraph 193, and at two-tenths of 1 cent per pound additional for galvanizing under paragraph 132 of the existing tariff act, while on similar sheets of steel duty must be assessed under the provisions of paragraph 135, and likewise the additional duty in accordance with paragraph 132 of said act, under the Department's decision (T. D. 22,929, dated April 1, 1901)."

The officials of the Canadian Pacific Railway have at present under consideration an immense scheme for the irrigation of the northwest of Canada, by which it is proposed to make good farming and grazing country out of the millions of acres which are dry and arid between Calgary and Medicine Hat, on the North Railway line. James Anderson, one of the leading irrigation engineers of the world, has recently traversed this area, and reports that there is nothing to prevent this work being successfully carried out. His report is being considered by the Canadian Pacific authorities, and it is understood that, as an experiment, 300,000 of the 3,000,000 barren acres will be put under irrigation.

S. W. Hanauer, United States Deputy Consul-General at Frankfort on the Main, reports that Germany's importations of iron ore during the first six months of this year were 2,048,020 metric tons, valued at 37,500,000 marks, about \$8,750,000. Spain furnished 54.6 per cent.; next came Sweden with 25.8 per cent.; Austria-Hungary supplied 6 per cent.; Belgium, 4.9 per cent.; Algiers, 2.9 per cent. Now that ocean freights are low, Mr. Hanauer

suggests that we ought to be able to supply Germany with iron ore.

The Pullman Palace Car Company are building a very handsome private car for Charles M. Schwab, president of the United States Steel Corporation. The car will be ready in a short time and will be named for Mr. Schwab's wife.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED NOVEMBER 8, 1901.

Aluminum— No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. Small lots..... 37¢ 100-lb lots..... 35¢ Aluminum Sheet, B. & S. gauge. In lots of 50 lbs or more. Wider than..... 6-in 14-in. 24-in. And including..... 14-in 24-in. 30-in. Nos. 13 to 19..... \$0.42 \$0.44 \$0.47 " 20..... .44 .46 .49 " 21 to 23..... .46 .48 .51 " 24..... .48 .50 .53 " 25..... .47 .51 .54 " 26..... .47 .54 .59 " 27..... .48 .57 .62 " 28..... .48 .57 .64 " 29..... .49 .60 .69 " 30..... .50 .64 .77 Note.—Lots of less than 50 lbs 5¢ per lb extra.		Iron, Sheet—Black. One Pass, C. R., R. G. Soft Steel. Cleaned. Nos. 14 to 16..... 3.80 Nos. 18 to 21..... 3.90 Nos. 22 to 24..... 4.00 Nos. 25 and 26..... 4.10 No. 27..... 4.20 No. 28..... 4.30 Russia, Planished, &c. Genuine Russia, accord- ing to assortment..... 11¢ @ 13¢ Do. Stained..... 8¢ @ 10¢ Patent Planished, 11¢ A, 12¢ B, 11¢ net Galvanized. Nos. 10 to 16..... 12¢ Nos. 17 to 21..... 13¢ Nos. 22 to 24..... 14¢ Nos. 25 to 26..... 15¢ No. 27..... 16¢ No. 28..... 17¢ No. 29..... 19¢ No. 30..... 21¢ 36 in. 1¢ per lb higher.		Registers— List Sept. 2, 1901. Black Japaned..... 60¢ @ 10¢ @ 10¢ @ 5¢ White Japaned..... 60¢ @ 10¢ @ 10¢ @ 5¢ Nickel Plated..... 60¢ @ 10¢ @ 10¢ @ 5¢ Bronze Finishes in Imitation of Gold. Silver, Copper or Bronze..... 60¢ @ 10¢ @ 10¢ @ 5¢ Electroplated in Brass, Bronze or Cooper..... 60¢ @ 10¢ @ 10¢ @ 5¢ White Porcelain..... 60¢ Solid Brass and Bronze Metal..... 50¢		Strainers, Conductor— Galvanized..... 50¢ Tin Pigs and Bars— Banca pigs, 25¢ @ 26¢ Straits, pigs, 25¢ @ 26¢ Straits, in bars, 26¢ @ 27¢ Tin Plates, American Charcoal Plates, Bright— N. B.—The price of 20 x 28 sizes is double the price of 14 x 20. Calland Grade: IC, 14 x 20..... \$7.50 IX, 14 x 20..... 9.00 IXX, 14 x 20..... 10.25 IXXX, 14 x 20..... 11.50 IXXXX, 14 x 20..... 12.75 Melyn Grade: IC, 14 x 20..... 7.00 IX, 14 x 20..... 8.50 IXX, 14 x 20..... 9.75 IXXX, 14 x 20..... 11.00 IXXXX, 14 x 20..... 12.25 Allaway Grade: IC, 14 x 20..... 6.50 IX, 14 x 20..... 7.60 IXX, 14 x 20..... 8.70 IXXX, 14 x 20..... 9.80 IXXXX, 14 x 20..... 10.90 Coke Plates, Bright— Bessemer Steel, or equal to J. B. Grade, full weight IX, 14 x 20..... \$7.00 @ 7.50 N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows: 100 lb..... 15¢ 95 lb..... 20¢ 90 lb..... 25¢ 85 lb..... 30¢ Terne Plates— N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward. About 40 lb coating..... \$17.50 @ 18.00 About 30 lb coating..... 16.75 @ 17.25 About 20 lb coating..... 14.75 @ 15.25 About 15 lb coating..... 12.75 @ 13.25 About 8 lb coating..... 11.50 Boiler Plates, American— IXX, 14 x 26.. (112 sheets)..... \$13.00 IXX, 14 x 28.. (112 sheets)..... 14.00 IXX, 14 x 31.. (112 sheets)..... 15.50 Troughs, Eave— See Eave Trough. Trucks, Stove— Improved Lock Frame, per doz... \$15.00 Steel Lock Frame, per doz..... 18.00 Daisy Improved pattern, per doz... 18.00 Tubes and Tubing— Brazed Brass, List Feb. 26, 1896, 30¢ @ 35¢ Copper and Bronze, 3¢ per lb. lbs. more than Brass. Seamless Brass Tubes, net list Feb. 6, 1899. Tin..... 50¢ Galvanized..... 50¢ Fittings for do..... 40¢ Zinc— 600 lb casks per lb..... 63¢ Per lb..... 74¢	
Antimony— Cookson..... 10¢ @ 11¢ Hallitt's..... 8¢ @ 9¢ U. S..... 8¢ @ 9¢ Brass, Roll and Sheet.. 15¢ @ 20¢ Conductors— Corrugated. Round or Square.— Galvanized 1/2 or more, N. S. T. d..... 70¢ @ 75¢ Not Nested..... 70¢ @ 75¢ Plain Round, 1/2 or more..... 70¢ @ 75¢ Nested..... 70¢ @ 75¢ Galvanized, Plain Round, Not Nested..... 70¢ @ 75¢ Spiral Riveted. Galvanized..... 40¢ See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor. Conductor Strainers— See Strainers, Conductor. Copper— Lake Ingot..... 17 1/2¢ @ 17 1/2¢ Casting..... 16 1/2¢ @ 17¢ Sheet and Bolt..... 21¢ @ 22¢ basis Cold Rolled Sheets..... 22¢ @ 23¢ basis Cold Rolled and Polished Sheets..... 23¢ basis Planished Sheets..... 24¢ basis Bottoms, Pits and Flats..... 25¢ basis Eave Trough, Galvanized Territory..... L. C. L. Eastern..... 75¢ @ 10¢ Central..... 75¢ @ 10¢ Southern..... 70¢ @ 12 1/2¢ S. Western..... 70¢ @ 10¢ Terms, 2% for cash. Eave Trough Mitres— Lap or Slip Joint..... list, 25¢ Elbows—Plain Adjustable— Eastern List. Tin..... 30¢ Galvanized..... 30¢ Perfect Elbows..... 40¢ Stove Pipe— Four-Piece 4 1/2 5 5 1/2 6-in. h. No. 1..... \$0.80 .85 .90 1.00 1.05 per doz. No. 2..... .65 .70 .75 .80 .85 No. 3..... .60 .63 .65 .70 .80 Elbows and Shoes— Galvanized..... 60¢ Gasoline— See Petroleum Products.		Lead— American Pig..... 4.62¢ @ 4.75¢ Bar..... 5 1/2¢ @ 5 3/4¢ Pipe..... 6 1/2¢ @ 7¢ Tin Lined Pipe..... 12 1/2¢ @ 20¢ Block Tin Pipe..... 37 1/2¢ @ 20¢ Sheet Lead, full rolls..... 7 1/2¢ @ 20¢ Sheet Lead, cut..... 7 1/2¢ @ 20¢ Old Lead in exchange, 1¢ per lb. Mitres, Eave Trough— See Eave Trough Mitres. Nickel— Per lb..... 60¢ @ 65¢ Paints, Oils, &c.— Leads— Lead, American White, in Oil; Lots of 500 lb or over..... @ 6 1/2¢ Lots less than 500 lb..... @ 7¢ Lead, White, in oil, 25 lb tin pails, add to keg price..... @ 1/2¢ Lead, white, in oil, 12 1/2 lb tin pails, add to keg price..... @ 1¢ Lead, white, in oil, 1 to 5 m as- sorted tins, add to keg price..... @ 1 1/2¢ Lead, white, Dry in bbls..... 5 1/2¢ @ 6¢ Lead, Red, bbls., 1/2 bbls. and kegs: Lots 500 lb or over..... @ 6¢ Lots less than 500 lb..... @ 6 1/2¢ Oils— Linseed, City, raw..... 62¢ @ 66¢ Linseed, City, boiled..... 64¢ @ 68¢ Linseed State and West'n, raw..... 62¢ @ 66¢ Spirits Turpentine— In Southern bbls..... 37 1/2¢ @ 38¢ In machine bbls..... 38 1/2¢ @ 39¢ Putty— In bulk..... \$1.25 In bladders..... 2.25 In cans 12 lb to 25 lb..... 2.25 In cans 1 lb to 5 lb..... 3.25 Petroleum Products— In Barrels (Barrel Included) Stove Gasoline..... 12¢ @ 13¢ Kerosene..... 13¢ @ 14¢ Pipe, Drain..... 40¢ Pipe, Spiral— See Conductors.		Roofing Material— 1 Ply Tarred Paper, 1/2 ton, \$28.00 @ 28.00 2 Ply Tarred Paper..... 1/2 roll, 108 sq. ft. 3 Ply Tarred Paper..... 1/2 roll, 108 sq. ft. Slater's Felt..... roll 500 sq. ft., 50¢ @ 60¢ Roofing Pitch..... 1/2 bbl. \$2.35 Rosin— Common and Good—Strained. Rosin, C. & D..... 1.45 @ 1.50 Rosin, E. & F..... 1.55 @ 1.65 Rosin, G. & H..... 1.70 @ 1.75 Rosin, I. & K..... 1.80 @ 2.30 Rosin, M. & N..... 2.85 @ 3.45 Shoes and Elbows— See Elbows and Shoes. Slate Roofing— f. o. b. oars, Quarry Station. According to size. Pennsylvania: Best Bangor, 1/2 sqr..... \$3.25 @ \$4.50 No. 1 Bangor Ribbon, 1/2 sqr..... 3.00 @ 3.50 Pen Argyle, 1/2 sqr..... 3.00 @ 3.75 Peach Bottom, 1/2 sqr..... 4.85 @ 5.60 No. 1 Boys, 1/2 sqr..... 3.35 @ 3.55 No. 1 Chapman Keystone, 1/2 sqr..... 3.25 @ 4.25 Vermont: Sea Green, 1/2 sqr..... \$2.00 @ \$3.15 Purple, 1/2 sqr..... 3.75 @ 4.25 Unfading Green, 1/2 sqr..... 3.25 @ 4.50 Rel. 1/2 sqr..... 6.50 @ 11.00 Maine: Brownville, Unfading Black: No. 1 quality..... \$5.25 @ 7.50 No. 2 quality..... \$4.25 @ 6.00 Solder— 1/2 & 1/4 guaranteed..... 17¢ @ 17 1/2¢ No. 1..... 14¢ @ 15 1/2¢ Prices of Solder indicated by private brands vary according to composition Soldering Fluids— —Per Pound. Smaller Barrels Q'ties Concentrated Flux..... 4c 5c Enreka Flux: Triple Strength..... 3c 3 1/2c Extra Concentrated..... 4 1/2c 5c Crystal..... 7c Gedney's Fluid..... 2c Lennox Fluid..... 2c 3c Perfection Flux..... 3c 3 1/2c Yager's Salts, 1 lb. bottles..... each, 50¢ 5 lb. bottles, per lb..... 45¢ Soldering Coppers— Per lb..... 22¢ @ 24¢ Spelter— Western Spelter..... 4 1/2¢ @ 4.60¢ Spiral Pipe— See Conductors. Stove Pipe Elbows— See Elbows, Stove Pipe. Stove Trucks— See Trucks, Stove.			

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized— Standard Boilers: 30 gal..... 65¢ @ 10¢ @ 70¢ 35 and 40 gal..... 65¢ @ 85¢ @ 10¢ Other sizes up to 52 gal..... 60¢ @ 80¢ @ 10¢ 52 gal. and above..... 60¢ @ 80¢ @ 5¢ Extra Heavy Boilers: 18 to 52 gal..... 50¢ @ 10¢ @ 80¢ 52 gal. and above..... 50¢ @ 55¢ Brass Work, Plumbers'— List of December 7, 1896. Compression: Bath Cocks..... 65¢ @ 65¢ @ 5¢ Bath Cocks and Double Bath Cocks..... 65¢ @ 70¢ Bibs..... 65¢ @ 65¢ @ 5¢ Bibs, Flanged..... 65¢ @ 70¢ Fuller: Bibs..... 70¢ @ 70¢ @ 10¢ Bath Cocks Nos. 1 to 4..... 70¢ @ 10¢ @ 75¢ Bath Cocks, No. 4..... \$2.00 net Ground Key Work: Finished Bibs..... 60¢ @ 65¢ Rough Bibs and Stops..... 65¢ @ 70¢ Rough Stop and Stop and Waste Cocks..... 70¢ @ 70¢ @ 5¢ Rough Stop and Stop and Waste Cocks, Patented..... 65¢ @ 65¢ @ 5¢ Miscellaneous— Basin Clamps..... 60¢ @ 65¢ Basin Plugs..... 60¢ @ 65¢ Chain Stays..... 60¢ @ 5¢ @ 70¢ Iron Boiler Couplings: Lead Pipe, Iron Pipe. Plain Face, 1/2 set \$0.05 \$1.05 Ground Face 1/2 set \$1.00 \$1.10 Sink or Bath and Wash Tray Plugs..... 60¢ @ 65¢ Soldering Nipples..... 70¢ @ 5¢ @ 75¢ Soldering Unions..... 70¢ @ 5¢ @ 75¢ Union Elbows, Hot Water Heating..... 75¢ @ 75¢ @ 10¢		Cocks, Valves, &c.— Cocks— Brass— Air and Radiator Air..... 75¢ @ 75¢ @ 5¢ Gas Meter and Union Meter..... 65¢ @ 70¢ Steam..... 65¢ @ 70¢ Iron— All Iron..... 75¢ @ 75¢ @ 5¢ Iron with Brass Plugs..... 65¢ @ 70¢ Valves— Brass— Check..... 65¢ @ 70¢ Garden Hose..... 65¢ @ 10¢ @ 70¢ Gate..... 65¢ @ 65¢ @ 10¢ Globe and Angle, hose outlet..... 65¢ @ 10¢ @ 70¢ Globe, Angle and Cross..... 65¢ @ 10¢ @ 70¢ Horizontal, Vertical and Angle Check..... 65¢ @ 65¢ @ 10¢ Hot Water Radiator..... 65¢ @ 70¢ Radiators..... 65¢ @ 70¢ Safety..... 65¢ Safety, Low Pressure..... 65¢ Jenkins' Disc: Check..... 65¢ Gate..... 65¢ Globe, Angle and Cross..... 65¢ Radiators..... 65¢ Radiator, Corner..... 75¢ Safety..... 65¢ Iron— Iron Body..... 70¢ @ 70¢ @ 5¢ Foot..... 65¢ @ 70¢ Jenkins Bros.: All Iron, except Gate..... 40¢ @ 5¢ All Iron Gate..... 35¢ @ 4¢ Iron Body, except Gate..... 60¢ Iron Body Gate..... 50¢ @ 50¢ @ 5¢ Swing Check..... 50¢ Earthenware— Brown Glazed..... 20¢		Porcelain, List of Aug. 15, 1901: Class Basins, Urinals and Hoppers... A, 80¢ Closet Bowls, Sundries, Wash- B, 40¢ outs and Pedestals..... C, 50¢ Fittings— Brass Fittings— Finished..... 70¢ @ 75¢ Rough..... 70¢ @ 75¢ Bushings..... 70¢ @ 75¢ Nipples..... 70¢ Unions, Rough and Finished..... 70¢ @ 70¢ @ 5¢ Iron— Cast Iron Fittings, Black and Galva- nized, Standard Sizes..... 65¢ @ 70¢ Cast Iron Bushings and Plugs..... 65¢ @ 75¢ Cast Iron Flanges..... 65¢ @ 70¢ Cast Iron Floor Flanges..... 65¢ @ 75¢ Malleable Iron Fittings..... 50¢ @ 55¢ @ 55¢ " Bushings..... 70¢ @ 70¢ @ 10¢ " Unions..... 70¢ @ 10¢ @ 75¢ " Unions, Flange 60¢ @ 10¢ @ 70¢ " Pipe Hangers, Universal 50¢ Wrought Iron Nipples..... 70¢ @ 75¢ " Couplings..... 60¢ @ 65¢ " Long Screws..... 60¢ @ 65¢ Lavatories— Porcelain Enameled Iron..... 30¢ @ 30¢ @ 10¢ Oakum— Plumbers' Oakum, 50 lb. bales, 1/2 lb 2 1/2¢ Pipe— Brass, Iron Pipe Size— 1/4 1/2 3/4 1 1/2 2 1/2 3 1/2 4 1/2 5 1/2 6 1/2 8 1/2 10 1/2 12 1/2 14 1/2 16 1/2 18 1/2 20 1/2 22 1/2 24 1/2 26 1/2 28 1/2 30 1/2 32 1/2 34 1/2 36 1/2 38 1/2 40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2 74 1/2 76 1/2 78 1/2 80 1/2 82 1/2 84 1/2 86 1/2 88 1/2 90 1/2 92 1/2 94 1/2 96 1/2 98 1/2 100 1/2 Cast Iron Soil— List Feb. 25, 1901. 2 to 5 inch inclusive. Standard..... 60¢ @ 60¢ @ 10¢ Extra Heavy..... 65¢ @ 70¢		All Fittings..... 70¢ @ 75¢ Wrought Iron— List Feb. 15, 1900. Black Galv. 1/2 to 1 1/2 inch..... 57¢ 43¢ 3/4 to 12 inch..... 64¢ 51¢ NOTE.—Manufacturers' prices are much lower than above, but prompt shipments are not obtainable. Radiators— Standard List. Steam..... 50¢ @ 21¢ Hot Water..... 50¢ Sinks, Etc.—Cast Iron— Black Galv. Sinks, Square, Half Round and Corner..... 60¢ @ 65¢ 60¢ @ 65¢ Sink Legs..... 60¢ 60¢ @ 5¢ Sink Backs..... 60¢ 60¢ @ 5¢ Boiler Stands, Cast Iron..... 60¢ @ 60¢ @ 10¢ Cesspools, Cast Iron..... 60¢ Wrought Steel Sinks— New Era, Galv'd and Enameled..... 70¢ @ 5¢ New Era, Painted..... 50¢ @ 10¢ L. & C..... 50¢ Traps— Drawn Lead Traps, List June 3, 1901..... 50¢ @ 50¢ @ 10¢ Tubs, Bath— Cast Iron Enameled Bath Tubs. Regular Patterns, Guaranteed, 45¢ @ 50¢ All Special Patterns..... 25¢ Non-guaranteed Brands, complete line..... 45¢ @ 50¢ Solid Copper, List of Feb. 1, 1899..... 40¢ Solid Porcelain—Class A, 30¢; B, 40¢; C, 50¢. Steel Clad Copper Lined, list of Feb. 1, 1899..... 45¢ @ 50¢
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Mazee Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
- Hollow Ware.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.
- Hotel Cooking Apparatus.**
Smith & Anthony Co., Boston, Mass.
- Household Specialties.**
Silver & Co., New York.
- Ice Cream Dishers.**
Seavey Mfg. Co., Boston, Mass.
- Iron, Galvanized Sheet. (See Sheets, Galvanized.)**
- Iron and Steel, Sheet. (See Sheets, Iron and Steel.)**
- Iron, Planished Sheet.**
Amer. Sheet Steel Co., New York.
- Iron Shutters and Doors.**
Garry Iron & Steel Co., Cleveland, O.
- Lath, Metallic.**
Schrattwieser Metal Lath Works.
- Lead Pipe.**
Colwell Lead Co., 63 Centre St., N. Y.
- Lightning Rods.**
Washburne, E. G. & Co., 46 Cortlandt St., N. Y.
- Lunch Boxes.**
Seavey Mfg. Co., Boston, Mass.
- Manufacturing Sites.**
Chamber of Commerce, Muskegon, Mich.
- Metal Ceilings. (See Ceilings, Metallic.)**
- Mica.**
Asheville Mica Co., Asheville, N. C.
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Palermo Mica Co., 115 Beekman St., N. Y.
- Milk Cans.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Nickel Plating Outfits.**
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.
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Bliss, E. W. Co., Brooklyn, N. Y.
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Miner & Peck Mfg. Co., New Haven, Conn.
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Phila. Machine Tool Co., Phila., Pa.
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Garvin Machine Co., 257 Spring Street, New York.
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Atlas Radiator Pedestal Co., New London, Conn.
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Castle, Wilmot & Co., Rochester, N. Y.
Independent Register Co., Cleveland, Ohio.
Rochester Radiator Co., Rochester, N. Y.
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American Radiator Co., Chicago, Ill.
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Frink, I. P., 551 Pearl St., New York.
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Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
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- Roofing.**
Asphalt Ready Roofing Co., 136 Water St., N. Y.
- Roofing Cement and Paint.**
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Perkins, J. L. & Co., Chicago.
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Garry Iron & Steel Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
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Salem Nail Co., 279 Pearl St., N. Y.
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Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
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Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
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Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. (See Roofing and Siding.)

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., N.Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

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Vogel, Wm. & Bros., Brooklyn, N. Y.

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ackman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.

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Lappers, Frery & Clark, New Britain, Conn.

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Kirk Mfg. Co., Toledo, O.

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Dixon, Jos. Crucible Co., Jersey City, N. J.

Stove Casters.
Krmer Bros., Dayton, O.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Stove and Metal Polish.
Ayling Bros., Chicago, Ill.
Hoffman Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobelle Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.
Cheney, S. & Son, Maunius, N. Y.

Stove Repairs.
Brauer, A. G., St. Louis, Mo.
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N.Y.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Kramer Bros., Dayton, O.
Magoon, A. J. & Son, Providence, R. I.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.
Union Stove Repair Co., Chicago, Ill.

Stove Trimmings, &c.
Greene, W. F. Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac Mich.

Berestrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Boynston Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Kelipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
Floyd Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Galusha Stove Co., Rochester, N. Y.
Gurney & Co., Boston, Mass.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Scull Bros. Co., Crestline, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Victor Stove Co., Salem, O.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Adler H. Co., Pittsburgh, Pa.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Economy Stove & Mfg. Co., Detroit, Mich.

Stoves and Ranges, Oil, Vapor and Gasoline.
Hessler, H. E. Co., Syracuse, N. Y.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Ternc Plates.
American Tin Plate Co., New York.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Tin Plate
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders' D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Valves.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Rosen, D. J., 439 Canal St., N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Wayne Anthony Mfg Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N.Y.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

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THE METAL WORKER.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

GALVANIZED IRON WORKER, experienced in estimating and jobbing work, to go to Mexico. Carr Brothers, 61 Broadway, New York. Nov. 9

At once, a **WORKING FOREMAN** in cornice department; must be a hustler and capable of turning out first-class work; one who understands drafting, raising circle work, &c.; state wages. N. E. Steel Roofing Company, Worcester, Mass. Nov. 9

JOBBER TINSMITH who has had experience in New York or Brooklyn; a yearly job to right man; young man preferred. "F. J. T.," care *The Metal Worker*, New York. Nov. 9

TINNER; one who can do all kinds of tin and metal work, repair bicycles and gasoline stoves, and all kinds of repairing that come in country tin shop; also can figure on plans. John Stoelzle & Bro., Carbondale, Ill. Nov. 9

Good **CORNICE** and **SKYLIGHT MAKERS**; also good **TINSMITHS** for bench work and furnace work. Palstum & Tornquist Company, Monroe, cor. Elm street, Passaic, N. J. Nov. 9

MANAGER for tin plate sales department; must be a good correspondent and thoroughly versed in all grades of tin plate; long experience in the marketing of high grade plates very essential; state fully past experience and salary expected. Box 472, Canton, Ohio. Nov. 9

An experienced **FOUNDRY FOREMAN** for a radiator works; one who can take entire charge from the core room; good pay to right party. "X. Z.," care *The Metal Worker*, New York. Nov. 9

At once, **PLUMBER**, capable of doing tin work. H. R. Talmadge, Sayre, Pa. Nov. 2

One first-class **TINNER**; must be man who can approach customers and lay out his own work; good wages to the right man. John W. Hartzel, Rochester, Pa. Nov. 2

Man experienced in figuring cornice work and slate and tile roofing; give reference and wages wanted. Box 158, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 2

Man as **ASSISTANT TO FOREMAN** in cornice shop in Chicago; must understand detailing and cutting; reference required. Address, stating weekly wages wanted, one year contract. Box 158, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 2

Fifteen skilled **CORNICE** and **SKYLIGHT WORKERS** immediately; none but mechanics wanted. The Clason Architectural Metal Works, Providence, R. I. Nov. 2

SALESMAN of unexceptional ability to take charge of Boston office and cover adjacent New England territory, representing a line of cast iron, steam and water house heating boilers of highest reputation and having an established trade. Address, with references, "M. B. H.," care *The Metal Worker*, New York. Nov. 2

Several first-class **SHEET IRON WORKERS**; steady work for the right men; state wages expected, age, if married, and how soon you could come to work. Address your reply to Box 428, Hartford, Conn. Nov. 2

A **SALESMAN** acquainted with oil and gasoline stove trade in New England; state acquaintance and give references; for 1902. "New England," care *The Metal Worker*, New York. Nov. 2

Man as **ASSISTANT PATTERN CUTTER** on sheet iron work; steady job for the right man and good chance for advancement. Address, stating age, experience, if married, and wages expected, to Box 428, Hartford, Conn. Nov. 2

A **SALESMAN** acquainted with oil and gasoline stove trade in New York State; acquaintance and give references; for 1902. "New York State," care *The Metal Worker*, New York. Nov. 2

At once, a practical **PLUMBER** and **GENERAL WORKMAN** for a country shop in a nonunion town; must be temperate and have some knowledge of the work; wages \$2.50 per day. F. W. Brown, Suffield, Conn. Nov. 2

At once, a first-class **PLUMBER**; one familiar with country work preferred; must be sober; \$3 per day and steady work to the right man. Apply to "M. H.," White Plains, N. Y. Nov. 2

One good **TINNER** who understands furnace work; state wages. E. Power, Frankfort, Ky. Nov. 2

TINNER experienced in blow piping; steady work for reliable man. O. Porbeck, 2208 North Broadway, St. Louis, Mo. Nov. 2

At once, good **TINNER**; one who understands pumps and general work in country shop; steady work at good wages to right man; give reference. Skinner & Richards, Collingwood, Ohio. Nov. 2

TINSMITH and **SHEET IRON WORKER** at once; steady job to a competent and reliable man; nine hours; state age, wages and reference. G. C. Winter, 136 Main street, Southbridge, Mass. Nov. 2

Competent **FOREMAN** in a cornice and skylight shop; one that can handle men and lay out work to advantage; none but competent men need apply. "Warren," care *The Metal Worker*, New York. Nov. 2

At once, a first-class **TINSMITH** and **JOBBER**; a steady position the year round to the right man. M. J. Shaut, Hornellsville, N. Y. Nov. 2

First-class **PLUMBER** and **GAS FITTER**; must be sober and reliable. Conover E. White, Atlantic Highlands, N. J. Nov. 2

TINSMITH for furnace work; must be a union man and a hustler. A. L. Yates, 521 Main street, Niagara Falls, N. Y. Nov. 2

At once, a good **TINNER** and **FURNACE-MAN**; must be sober and reliable. Conover E. White, Atlantic Highlands, N. J. Nov. 2

At once, a **TINNER** and **PLUMBER**; must be strictly sober, reliable, a hustler; give references and state wages wanted. Helena Tin & Plumbing Company, Helena, Ark. Nov. 2

CORNICE and **SKYLIGHT MAKERS**; come ready to work. Elizabeth Cornice Works, Julian place and Union street, Elizabeth, N. J. Nov. 2

First class **NICKEL PLATER**; one capable of managing plant in all details. "Manufacturer," care *The Metal Worker*, New York. Nov. 2

SITUATIONS WANTED.

CORNICE CUTTER; have had considerable experience in blow pipe work; South preferred. "Cornice Cutter," 8 Champlain street, Ogdensburg, N. Y. Nov. 9

TIN and **SHEET GALVANIZED IRON WORKER**, understanding ranges and furnace work; 18 years' experience. Chas. Stark, 522 Tenth street, New York. Nov. 9

By a first-class **TIN** and **SHEET IRON WORKER**, **CORNICE** and **SKYLIGHT MAKER**, able to cut his own patterns. M. Grossman, 745 Sixth street, New York. Nov. 9

By a competent man as **FOREMAN** in cornice and skylight shop, in or near Boston; best of references. "A. J.," care *The Metal Worker*, New York. Nov. 9

Foundryman as **FOREMAN** of an iron foundry; understands general jobbing, cotton machinery, stove plate and heater work; can furnish best of references as to ability. "R.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 9

By man with 18 years' experience in plating, buffing and polishing brass, copper and nickel. "Practical," care *The Metal Worker*, New York. Nov. 9

By first-class plumber as **JOB FOREMAN** or **MANAGER** of a good shop; can estimate, thoroughly understands plans and specifications, "Durham system;" city or country work; can handle mechanics to an advantage, overcome obstacles, competent on small or large jobs; practical experience of over 20 years; general pipe fitting. "New Yorker," care *The Metal Worker*, New York. Nov. 9

BOILER SALESMAN, at present engaged, wishes to change; will represent boiler or radiator manufacturer in Pennsylvania and Ohio; well acquainted with architects and trade in Pittsburgh and vicinity; references first-class. Address "Pittsburgh," care *The Metal Worker*, New York. Nov. 9

By **TINNER** and **SLATER**; first-class, sober and industrious; reference given. Box 163, Springfield, Tenn. Nov. 9

By a young man, age 29, as **BOOKKEEPER** or **HEAD CLERK** in a retail or wholesale hardware store; have worked in a hardware store for the past six years and am an experienced hardwareman; would like a position with a large firm; very best of reference furnished as a capable and trustworthy man. "Experience 119," care *The Metal Worker*, New York. Nov. 9

As **CUTTER** or **WORKING FOREMAN** in cornice shop, by one who understands his business. "N. R.," care *The Metal Worker*, New York. Nov. 9

A first-class **STOVE PATTERN MAKER**, **CARVER** and **DESIGNER**, with 25 years' experience, wants a permanent position in a stove foundry. Fred. C. Gebhardt, 731 Courtlandt avenue, New York. Nov. 9

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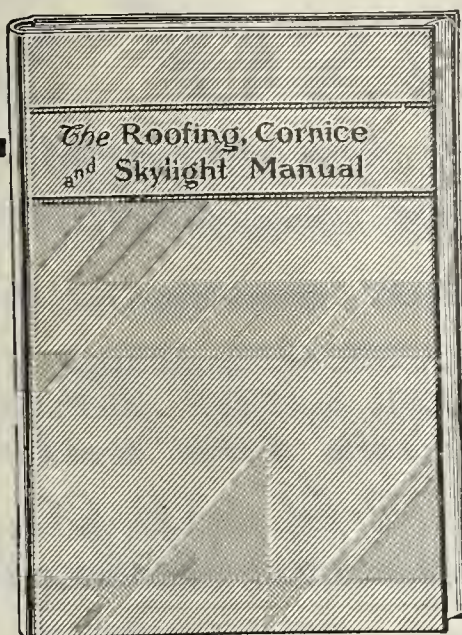
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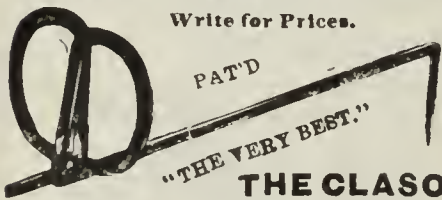
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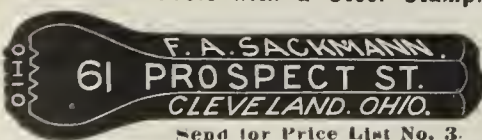
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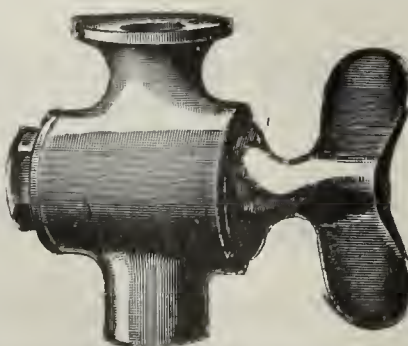
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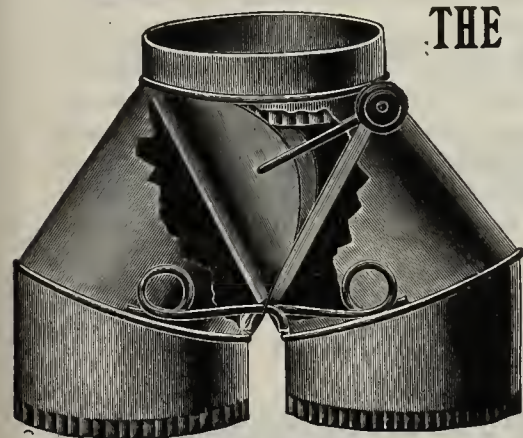
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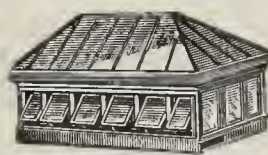
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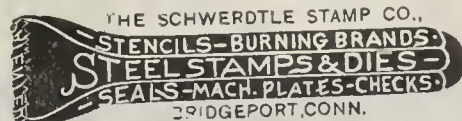
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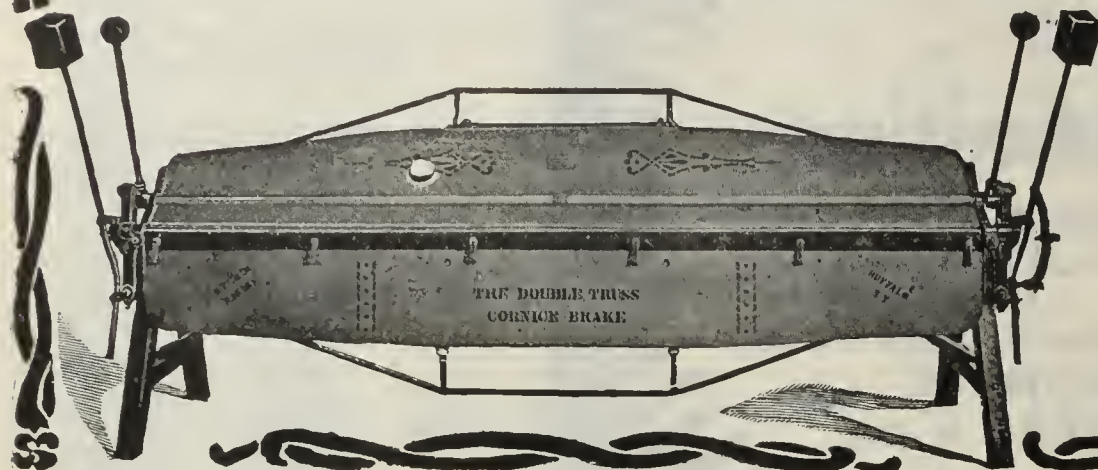
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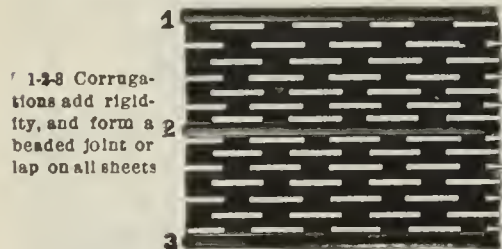
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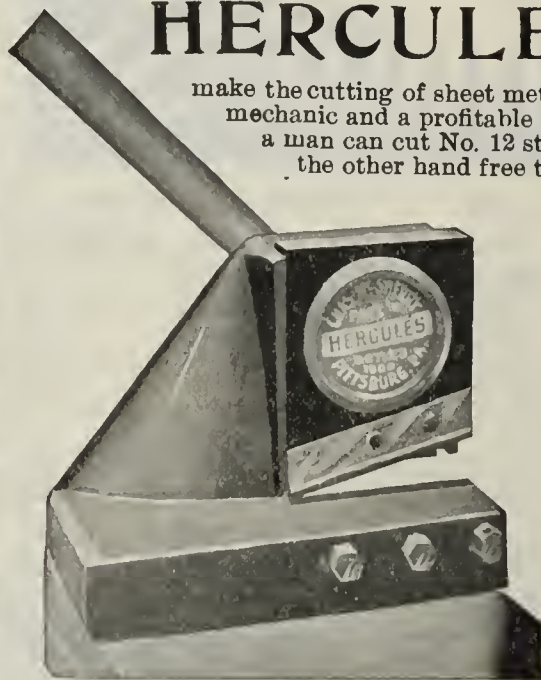
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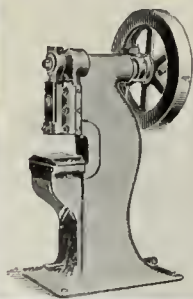
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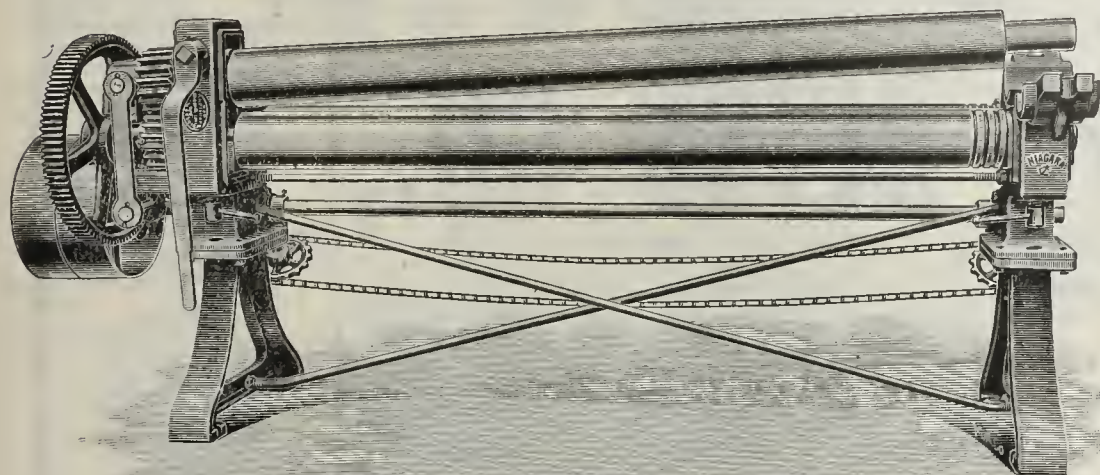
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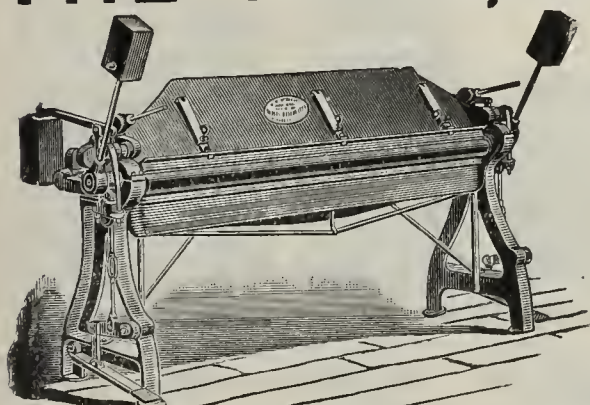
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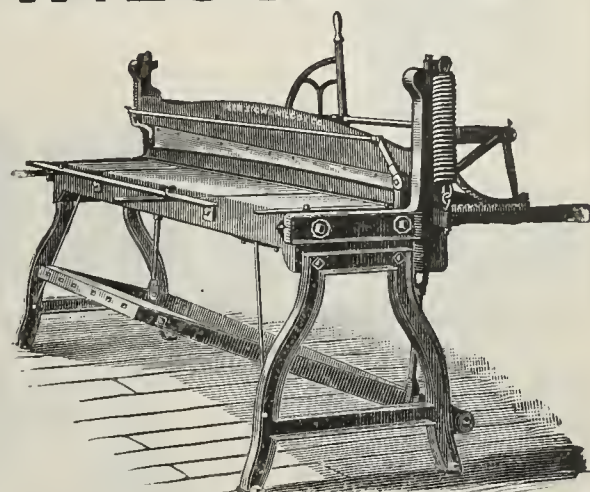


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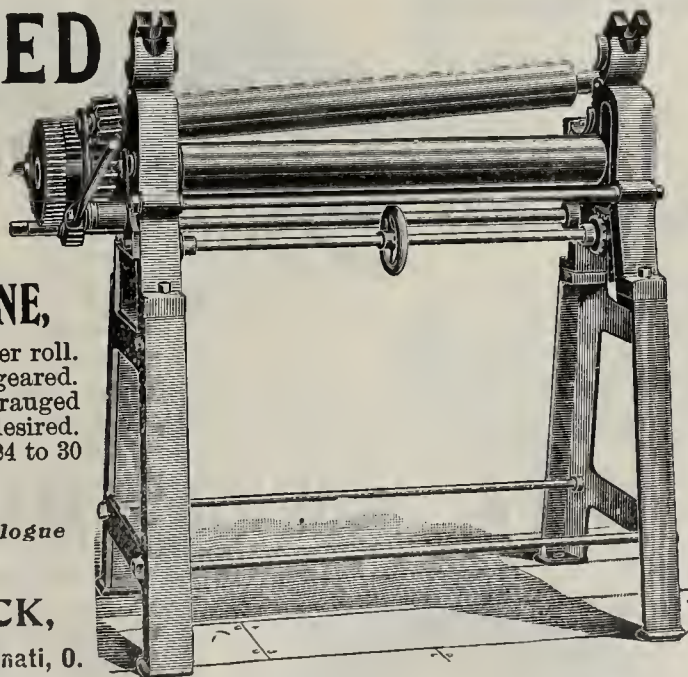
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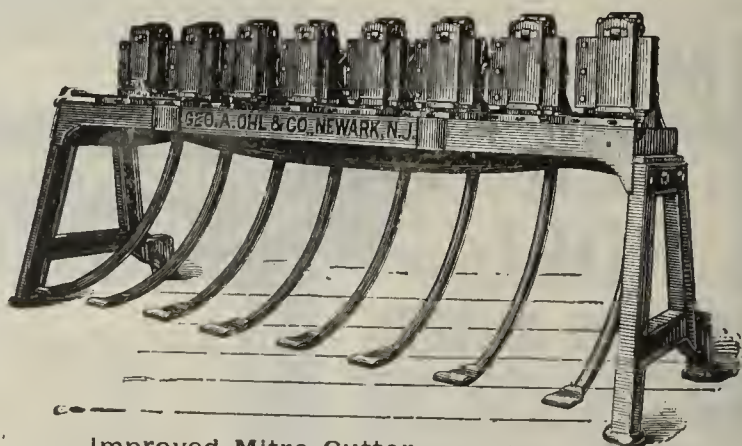
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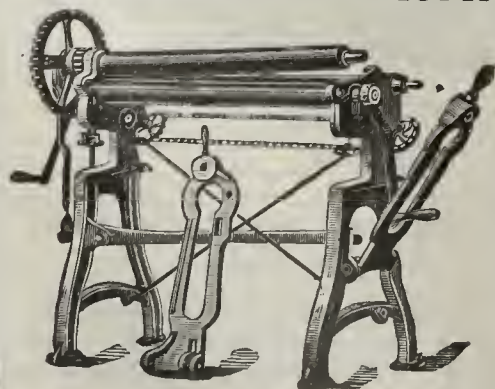
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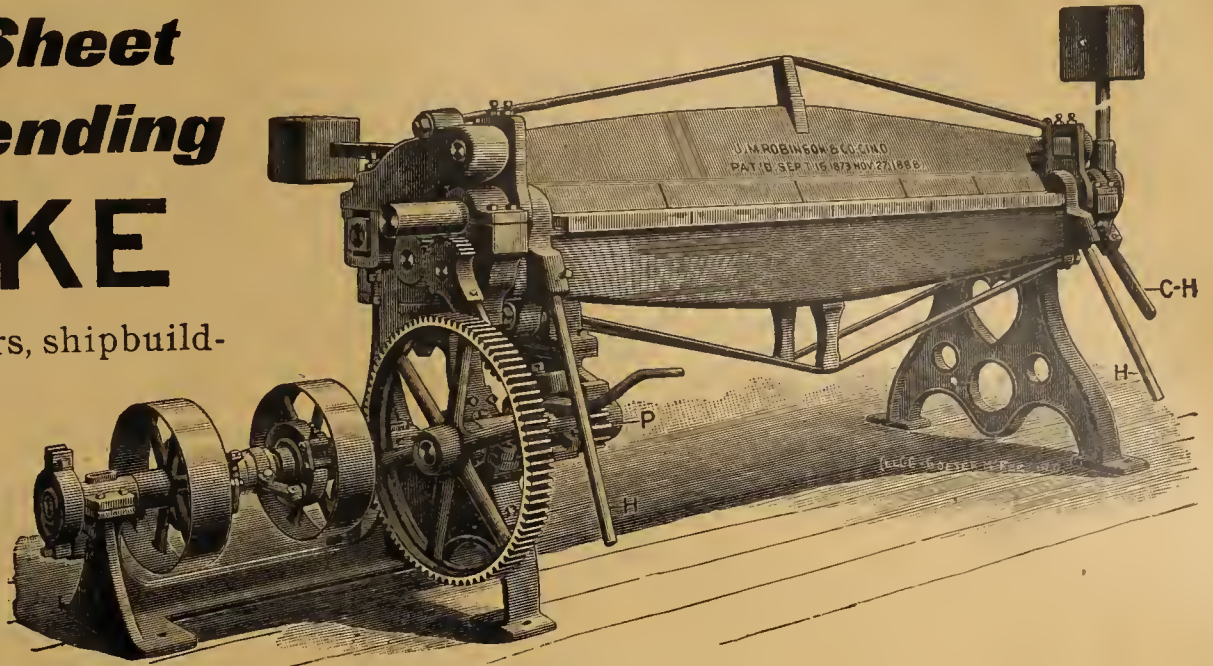
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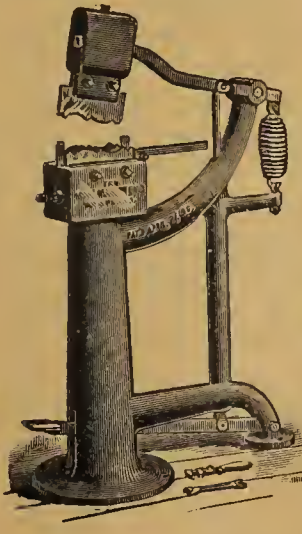
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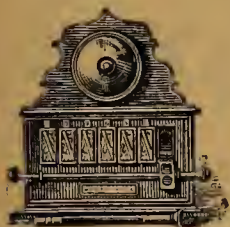
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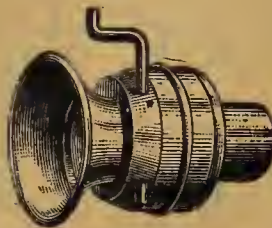
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MCLEOD & HENRY CO.,

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PARAGON POINTS—ALL TOGETHER.

The furnace that you want to handle is the furnace that has the fewest joints, the furnace with the equalized draft—the largest radiating surface—the ball bearing grate—the furnace that is self cleaning and that is most adaptable to your needs—and that furnace is the Paragon. It is well named—and it costs no more than the ordinary furnace.

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 Apollo is right and uni-
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 sometimes, by accident.

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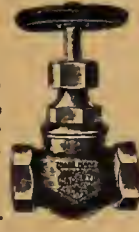
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are manufactured of the best steam metal, and are fully
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 20 x 23 to 20 x 39.
 Prompt shipments made.

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READ OUR "AD"
Page 15.

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ROUND OAK- STANDARD of AMERICA

One of the best
points of the
famous Genuine
Round Oak
is the way

It heats the
floor under
and around

the stove.

The base is small.
The grate hangs
low in the ash pit,
close to the floor—
no ash pan in the
way of the heat.
See? Notice the
imitations—
very large square
bases, grate high
from the floor,
deep ash pan.
How can they
warm the floor?
This is but one
of a great many
reasons why the
Round Oak outsells
all other stoves.
We want an agent
in every town—
where we have
none.



"Come kitty it's bed time"

*Estate of P.D. BECKWITH,
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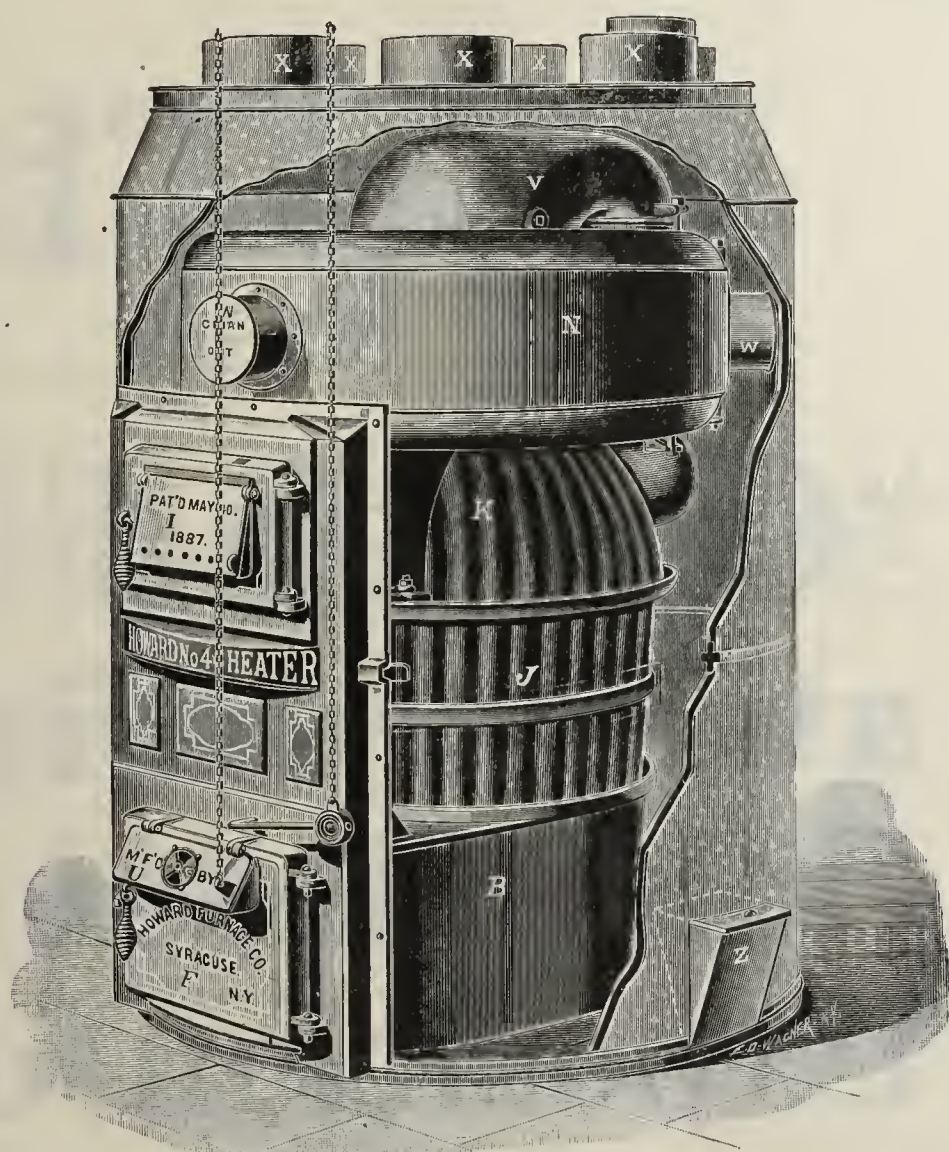
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REMARKABLY EFFICIENT.

FUEL SAVERS EVERY TIME.

The HOWARD

Single Radiator Warm Air Furnace.



Operated upon the "Down Draft" Principle.

A Powerful Heater, Responsive, Easily Controlled.

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VICTORY

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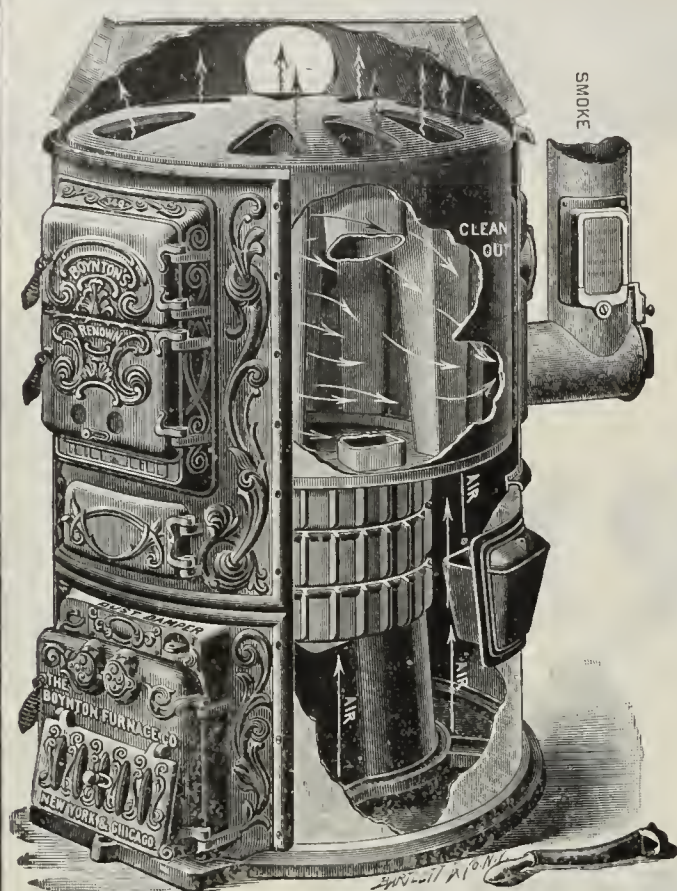
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nd Ranges in the World.

GO. BUFFALO.



BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

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Our Fall Styles Are Now Ready.



FAULTLESS FURNACES.

Extra Heavy Style—Highest Grade Made.

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Unique Style—Moderate Prices.

FULL PARTICULARS ON APPLICATION.

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208 WATER ST., NEW YORK.

The New WALKER BOILER

for Steam: for Water

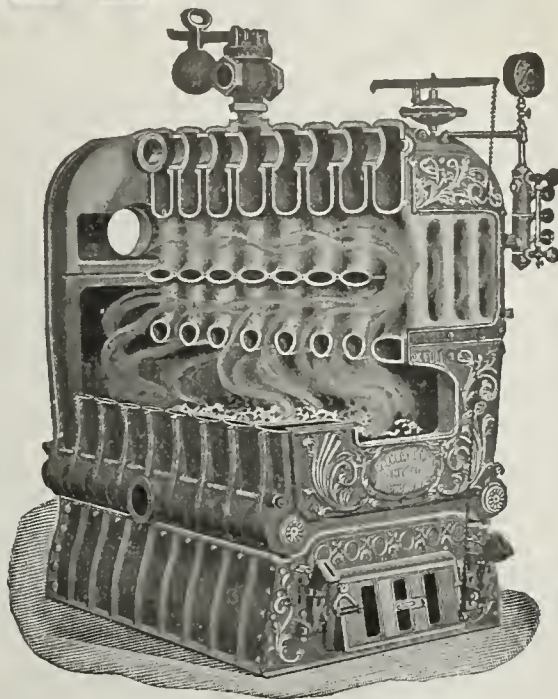
If this boiler were an ordinary boiler we would not spend money to make it known. There is no boiler like it; no boiler with so broad and deep a fire, no boiler with such safe ratings, and no boiler with so much size for the price.

Our rated capacities are absolute and fully guaranteed; make no deductions, please; it's not necessary.

For a 600-foot contract we sell a 600-foot boiler at the 600-foot price.

Walker & Pratt Mfg.
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31-35 Union St., BOSTON, MASS.



Makers Also of
CRAWFORD
RANGES.

Finest Factory in this Line in the World.

READ OUR OFFERINGS.

Special Advantages Over All Other Heaters.



OUR HEATERS are only 4 ft. 3 in. high, giving excellent elevation for Hot Air Pipes.

OUR HEATERS ARE ALL CAST IRON, no repairing of sheet iron drums necessary every few years.

OUR MANIFOLD TUBES are steel, $\frac{1}{8}$ inch thick, and will wear for a lifetime.

OUR HEATERS are supplied with the most modern grates, perfect dumping and shaking. Each bar can be separately replaced.

OUR HEATERS are so arranged that they can be perfectly cleaned by any one, and in a few moments.

Equally Efficient with Hard or Soft Coal.

Our Heaters save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE, REFERENCES AND FULL PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

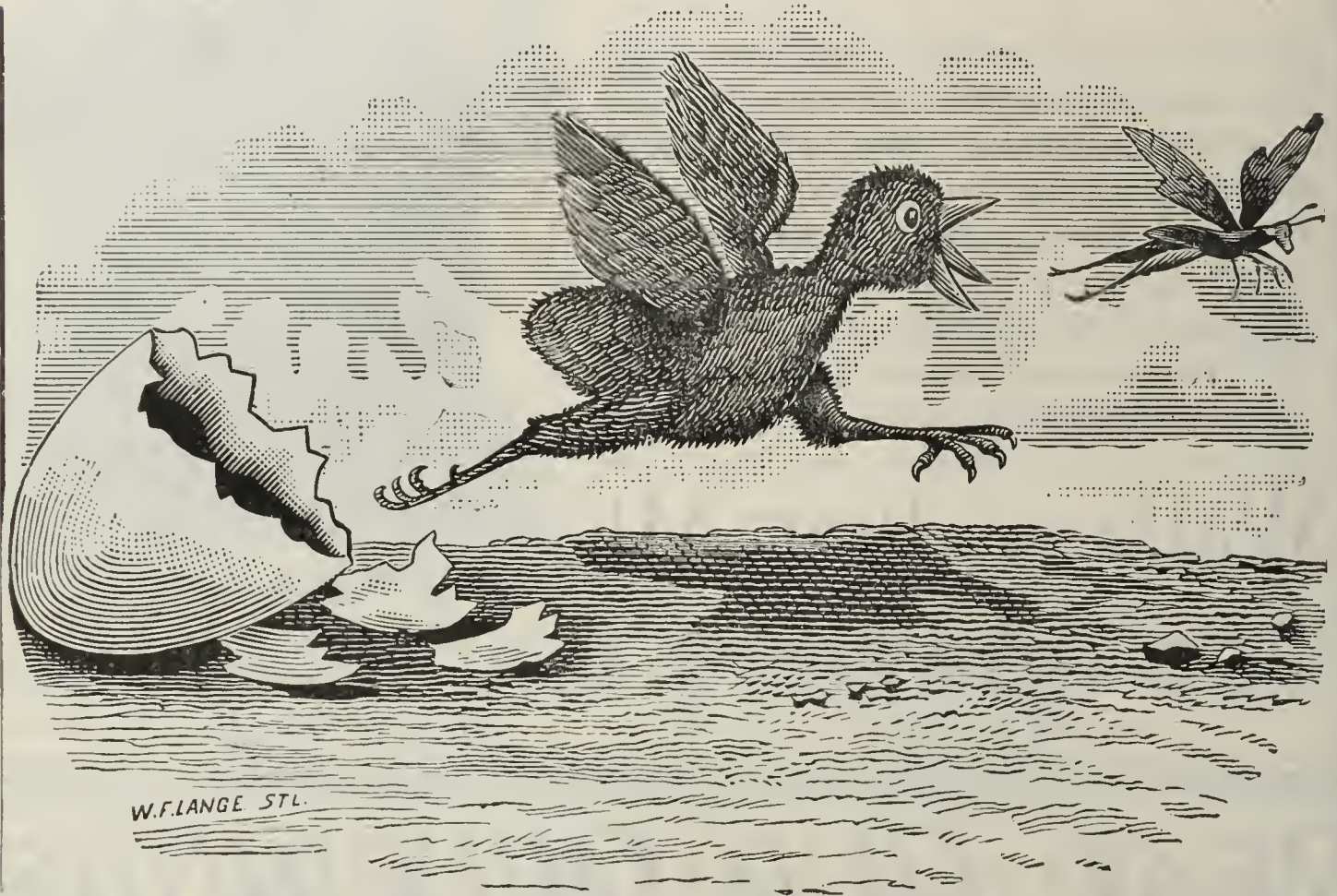
MANUFACTURERS of the FORBES WARM AIR FURNACE.

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FOR 1902.

“Quick Meal”



Gasoline and Oil Stoves

Will be **Better than Ever.**

Nearly every line will appear in a new dress and supplied with various improvements.

NOW, as ever, the “**QUICK MEAL**” will lead.

There will be no **Cheapening in Material**, nor departure from the **Scrupulous Attention to Detail** that has always characterized

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If you are not handling the “**QUICK MEAL**” you are not handling the **Best**.

NOW is the time to apply for exclusive agencies.

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P. S.—The sale of “**QUICK MEAL**” **STEEL RANGES** has doubled during the season. They are not the very cheapest but they are the very **BEST**.

✓ Ideal Boilers. ✓



Ideal Invincible Water Boiler.

We welcome the critical customers. Great pains are taken to supply their wants, for with our extensive assortment of Ideal Boilers it is easy to please the most exacting buyers.

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Send for our 1901 catalogue—
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AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
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CINDERELLA

STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.
We would be pleased to send our catalogue.



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WESTERN SALES AGENT,

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WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better,
more perfect than any other similar construction. You should write for prices and secure
our Catalogue.

It is made with High Closet, Rolling Front,
Six Holes, for Hard or Soft Coal; is the latest,
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one that you can offer as simply "out of sight"
compared with that sold by the peddlers. Try it.

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JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.

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The Largest and Most Complete Factory in the World for the Manufacture of Vapor Stoves and Ranges, Steel Ranges, Hotel Gas Ranges, Combination Coal and Gas Ranges, Oil Heaters and all styles of Gas Cooking and Heating Appliances.

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OUR 1902 VAPOR STOVE AND RANGE CATALOGUE is now ready to mail. Send for one. They are yours for the asking.

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Our policy has always been to progress, to introduce new ideas and improvements possessing real merit, and by giving constant and careful attention to every detail in manufacture, we propose to maintain the pre-eminent qualities for which our product is justly famous the world over.

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CHICAGO.

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Model Radiator

For Hard or Soft Coal.

Made in four sizes, Nos. 12, 14, 16 and 18.

Every stove a single or double heater complete, without the use of extra parts.

Large heating surface—Equal to that of an Oak.

Best and simplest reversible pipe collar.

Very substantial outer casing, which is easily removed.

Joints ground and cemented.

All doors fitted Air-Tight.

Our patented Air-Tight draft register in Ash Pit Door.

In this stove we use our new patented method of holding the sheets of mica. They will not get out of place or smoke up.

Handsome Nickel Ornamentation.

A postal card will bring you more information.

THE PORTSMOUTH STOVE & RANGE CO.,



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MORLEY BROS.,

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Agents for Michigan and
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BOSS HEATING DRUM.



THE NEW WAY OF CLEANING BOSS DRUMS.

THE OLD WAY OF CLEANING OTHER MAKE OF DRUMS.

Will Heat an additional room without expense. Will not check draft of stove.

CLEAN-OUT DOOR for removing soot without taking down pipe.

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GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
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CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

ECONOMY GAS HEATING STOVES.

FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, *Durable, Economical* and *Attractive* gas heating stoves on earth.

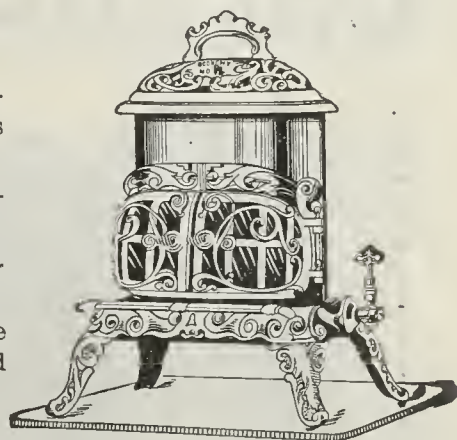
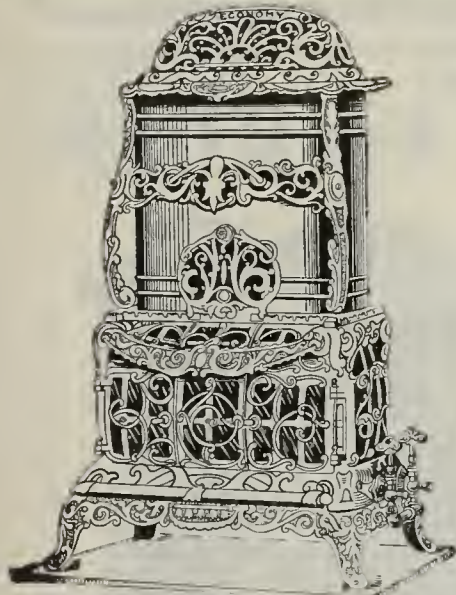
The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market *Absolutely free from odor or condensation.*

By securing the agency for the *Economy*, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

ECONOMY STOVE & MFG. CO.,

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We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

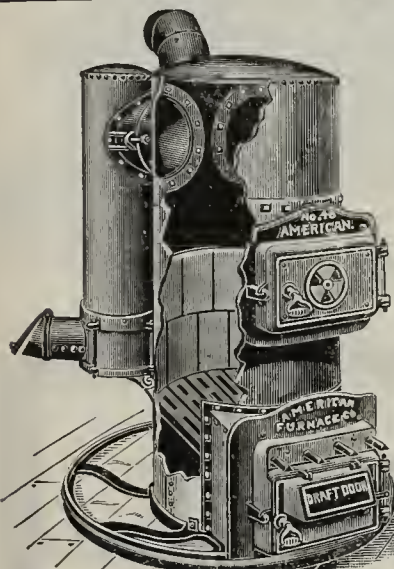
The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

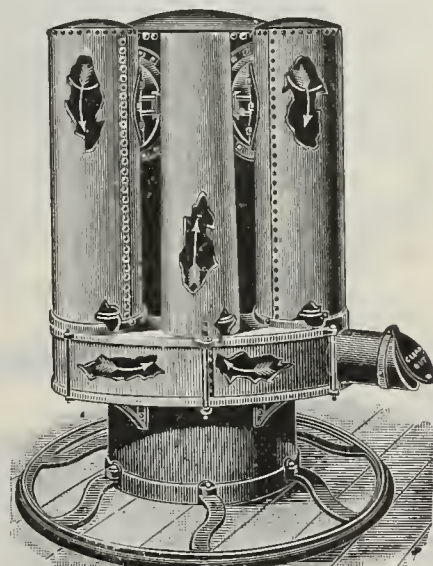
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1911-13 PINE STREET,

ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

**GAS STOVES
& BURNERS**

**HADLER
CO.
PITTSBURG
PA.**



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NO 34**

**THE MOST
COMPLETE LINE
FOR ALL GASES**

BURRELL & FOWLER - CLEV'D O.

JEWEL STOVES AND RANGES..



A Complete, Well Advertised Line.
Low Prices and Good Workmanship.

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DETROIT STOVE WORKS.
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Up= to=date Air=Ti ghts.

We Want Your Business!

**Our Goods Are Strictly HIGH-
GRADE and DURABLE.**

**We Make 65 Styles and Sizes of
AIR-TIGHT HEATERS.**

Our Heaters are made of Blue Polished Steel.
Superior Finish. Best Proportioned Stoves made.
Our Castings are Smooth. Our Mounting is perfect.

Screw Draft, Spark Arrester, Extra Heavy
Linings, Plate in Cover, Hinged Cover, Rein-
forced Tops that will not Warp.

Fuel Opening made with Wire Edge, prevent-
ing buckling and getting out of shape
Bottoms Double Seamed. Feet Bolted to Cleats
underneath Stove to prevent slipping.

**Large Capacity. Prompt Shipment
GUARANTEED.**

**Quincy Foundry
& Novelty Co.,**

QUINCY, ILL.

Write for Catalogue and Prices.



COSEY-Style C. HOT BLAST.



ROYAL-Style A.



**COOK STOVES,
OAK STOVES,
HEATING STOVES,
Air Tight Wood Stoves.
FIRE PLACE HEATERS,
FURNACES.**

Send for Catalogue and Price-List.

**THE B. C. BIBB STOVE CO.,
BALTIMORE, MD.**

BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

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MILWAUKEE, WIS.**

Twentieth
Century
Heaters

HOT WATER

—AND—

STEAM.

Magee

Twentieth
Century
Heaters

ROUND

—AND—

SECTIONAL.

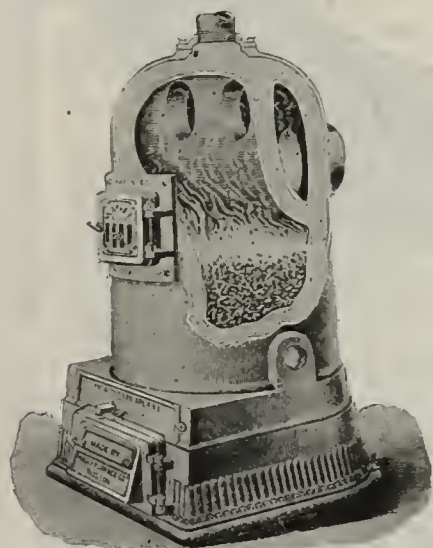
Slow Combustion Implies Economy;
Rapid Combustion, Extravagance.

THOSE WHO USE
MAGEE
Steam and Water
HEATERS

know that their ratings are
pretty safe propositions

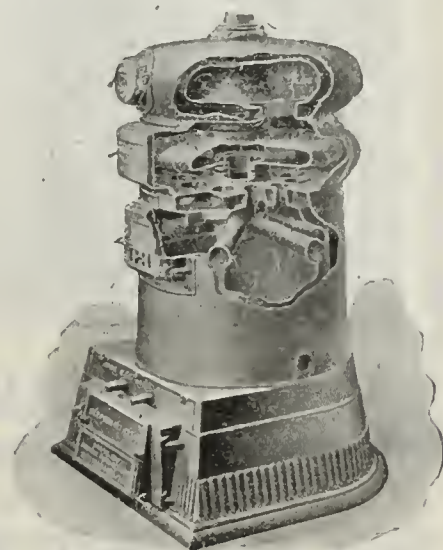
TO GO BY

And it's Safest to be on the Safe Side.



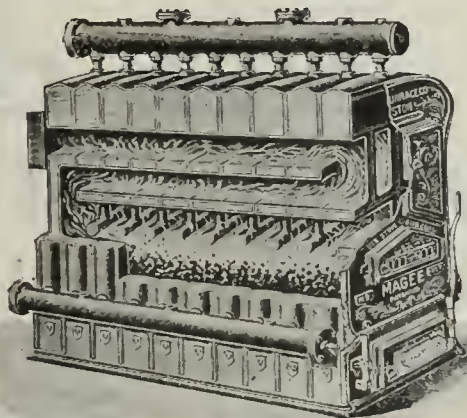
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Sq. ft. Water Rad., - 300 to 1450
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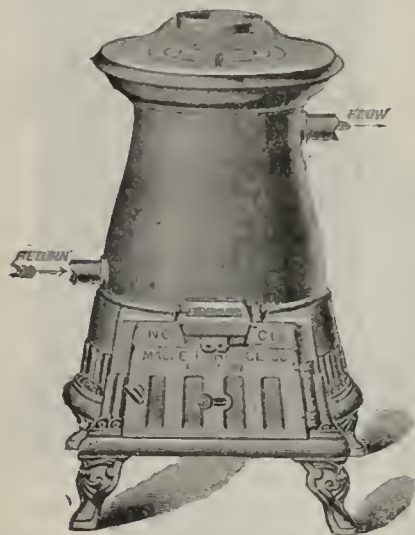
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Tank Heaters—14 Sizes.

Cap. 65 to 400 Gallons. 6 Styles.



Laundry Heaters—4 Sizes.

Square and Round Top.
Cap. 40 to 150 Gallons.
No. of Irons, 10 to 25.

DIRECT FIRE SURFACE

As Compared with

FLUE SURFACE

—IS AS—

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The Value of Perfect Combustion Cannot be Overestimated.

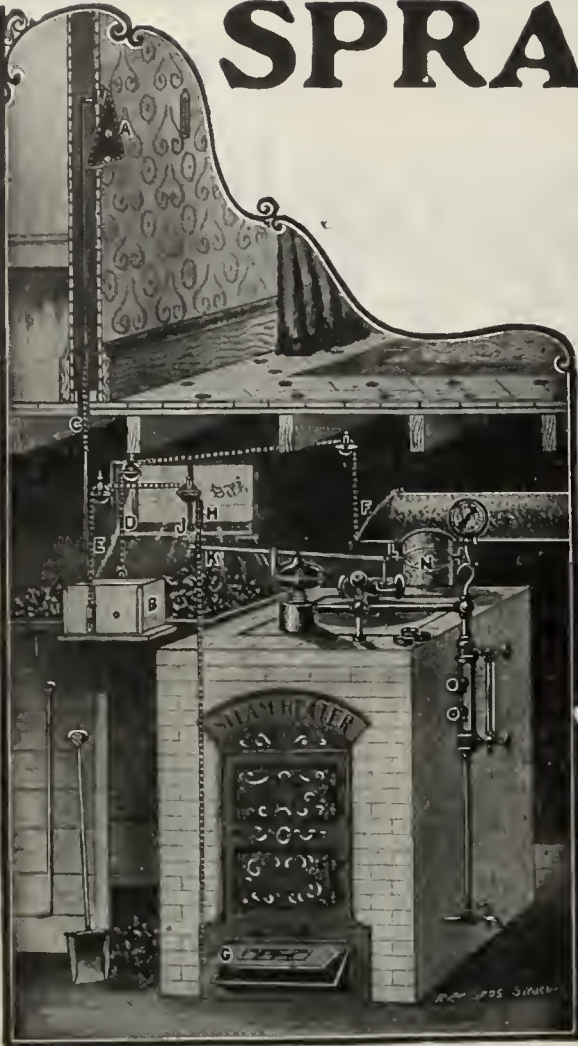
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MAGEE FURNACE COMPANY, 32-38 Union St., BOSTON.

Steam and Hot Water Heaters, Warm Air Furnaces, Combination (Warm Air and Hot Water)
Ranges, Stoves, Etc. Largest Line Under One Name in the United States.

SPRAGUE Damper and Valve Regulator.



Order one for “that heater” which is not just right. We will gamble that it is not being properly regulated. Give your customer 30 days' trial. We will stand by you.

Made by **HOWARD THERMOSTAT CO.,** West Water Street, **OSWEGO, N. Y**

NONE AS GOOD.



RETURN FLUE. STEEL PLATE RADIATOR.

MUELLER Furnaces and Boilers ARE THE BEST.

Made in All Sizes and for All Kinds of Fuel.

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GET OUR SPECIAL REGISTER OFFER.

EVERYTHING IN THE HEATING LINE



DOUBLE RADIATOR. ALL CAST IRON.

L. J. MUELLER FURNACE CO.,

Established 1857.

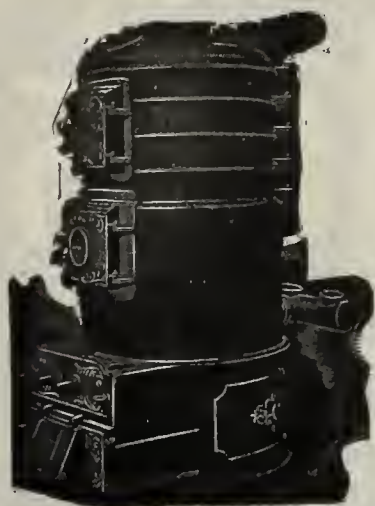
190 Reed St., **MILWAUKEE, WIS.**

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS



400 Series Hot Water Heater.

THE NAME

GURNEY

on heating apparatus denotes THE BEST. Secure absolute satisfaction by specifying and using them in your heating work. Capacities for all requirements.

Send for latest trade catalogue.

GURNEY HEATER MFG. CO.,

74 Franklin Street, BOSTON, MASS.

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BENGAL FURNACES

MEET ALL THE REQUIREMENTS

of convenience and economy—are simple in construction and manipulation and—please the people.

ALL CAST IRON.

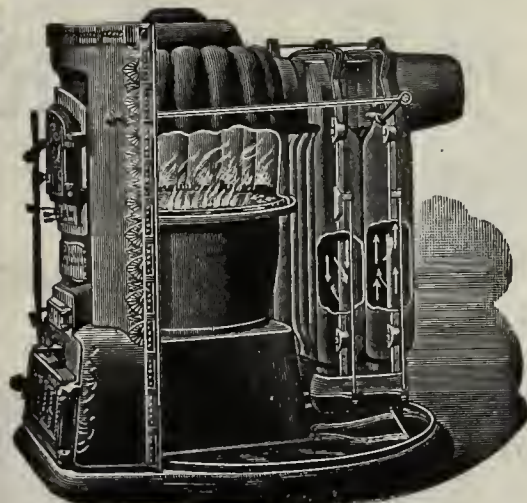
ADAPTED TO ALL KINDS OF CELLARS.

Burn PERFECTLY ANTHRACITE or BITUMINOUS COAL or Coke.

BENGALS HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.



Eastern Selling Agents,

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ROYERSFORD, PA.

Gilt Edge Warm Air

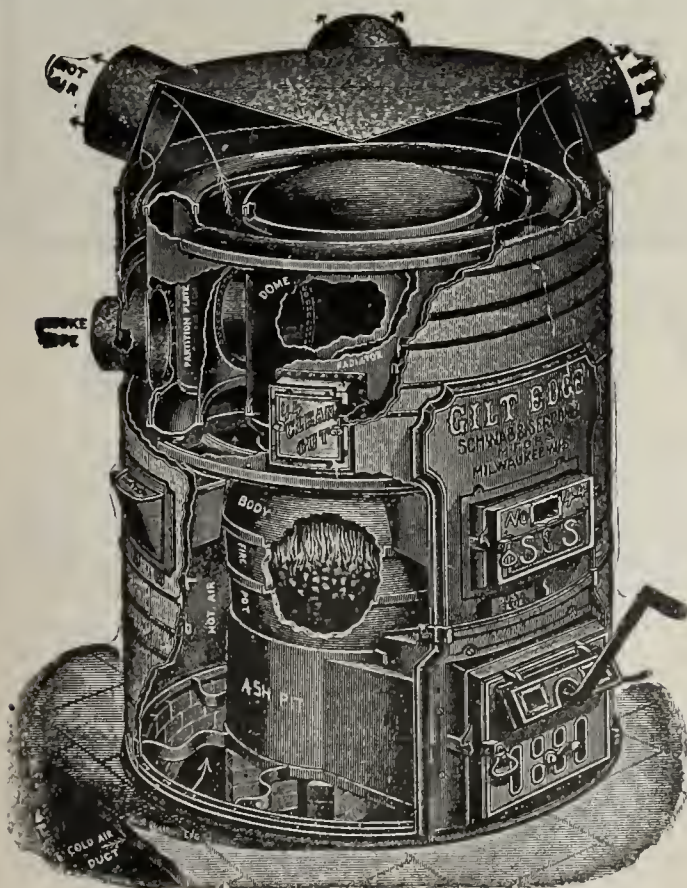
AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.



Royal Heaters.

MANUFACTURED BY THE
HART & CROUSE CO.
UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
ST. LOUIS.



Emperor Furnaces FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces,
Furnished for either Brick or Galvanized Iron Casing

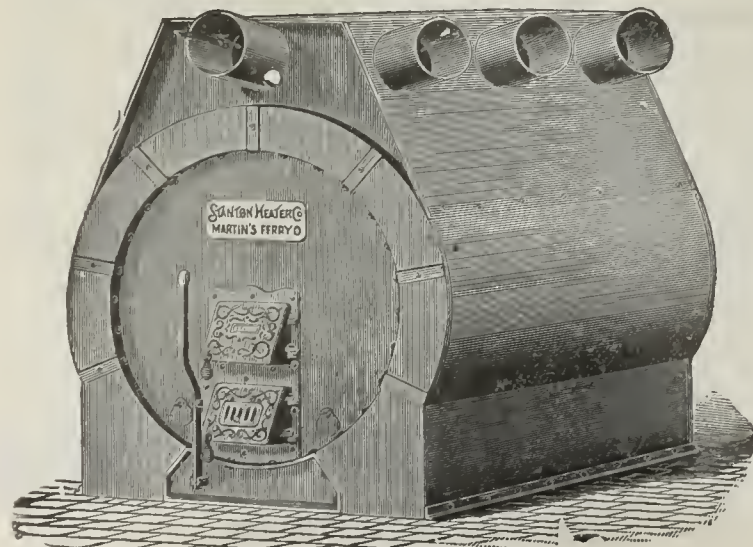
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Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



STATE COLLEGE, PA., June 15, 1900.

THE STANTON HEATER CO., Martin's Ferry, Ohio.

GENTLEMEN:—The Stanton Heater is giving the best kind of satisfaction. It will produce good heat from any kind of fuel. My average cost of fuel, per month, for the past winter was three tons of coal dust from soft coal to heat 43,000 cubic feet of space with a No. 68 Heater; however, this space is 3,000 cubic feet over the capacity of your Heater, but the heater did the work easy, and held the temperature in zero weather so it would not change over four degrees in twelve hours without touching the Heater.

The Stanton Heater is, in my judgment, the most modern and economical warm-air generator of this age.

Sincerely yours, J. N. KRUMRINE.

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THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week

S U P E R I O R F U R N A C E S

U T I C A H E A T E R S

ALWAYS
EFFICIENT

IMPROVEMENTS

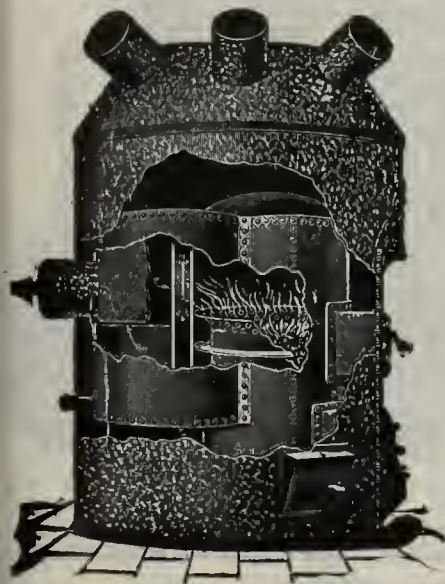
We are constantly making additions and improvements to our entire line of furnaces. SUPERIOR Furnaces and UTICA Heaters are as nearly perfect as it is possible to make any warm air furnace.

To say a furnace is thoroughly modern and up-to-date—and mean what you say—is half the selling argument.

We would like to send YOU our catalogue and quotations.

UTICA HEATER COMPANY, Manufacturers,
UTICA, N.Y.

CHICAGO HEATER & SUPPLY CO., Western Managers,
54 Dearborn Street, CHICAGO, ILL.



WEIR ALL GAS AND STEEL SOOT CONSUMING **FURNACE.**

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

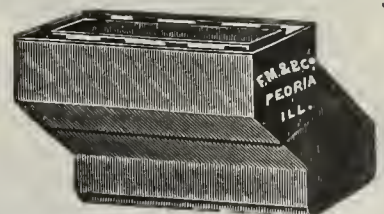
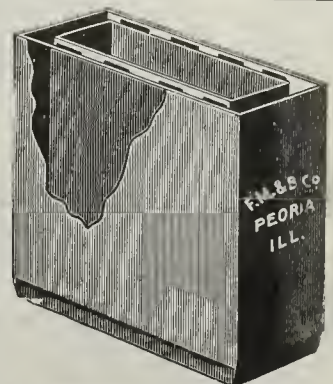
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CONTRACTORS USING OUR BOILERS

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WE'LL GLADLY TELL YOU HOW.

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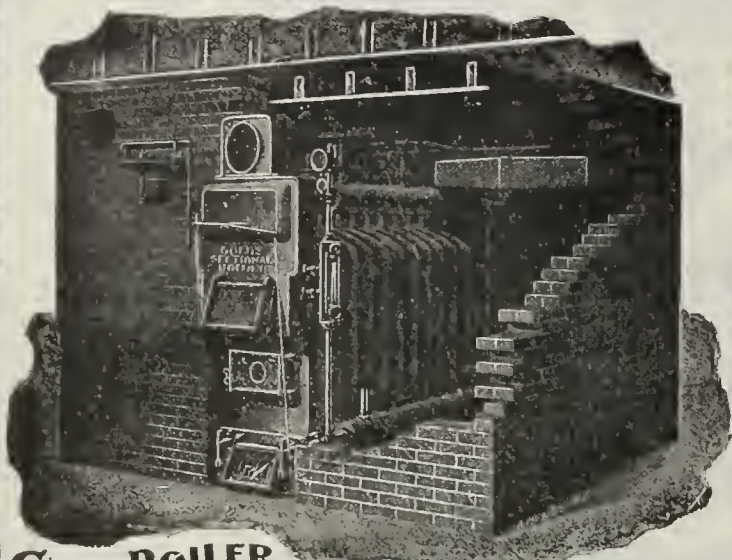
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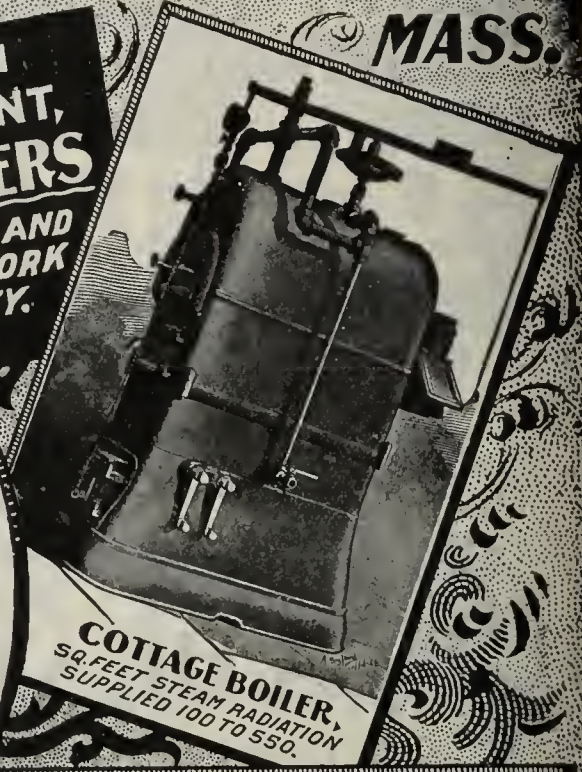
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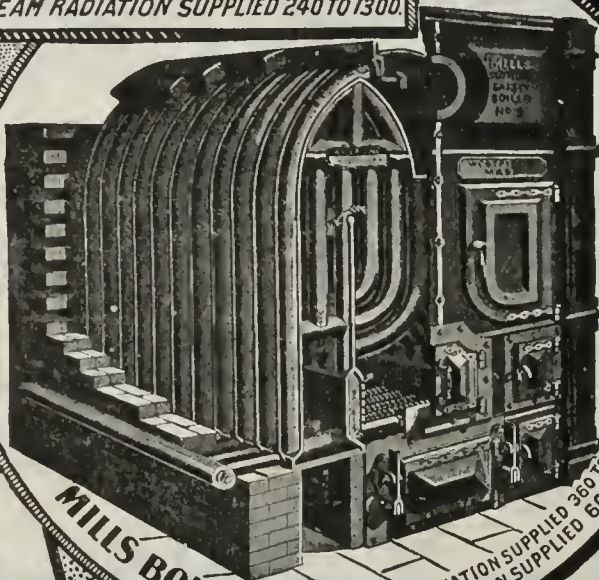
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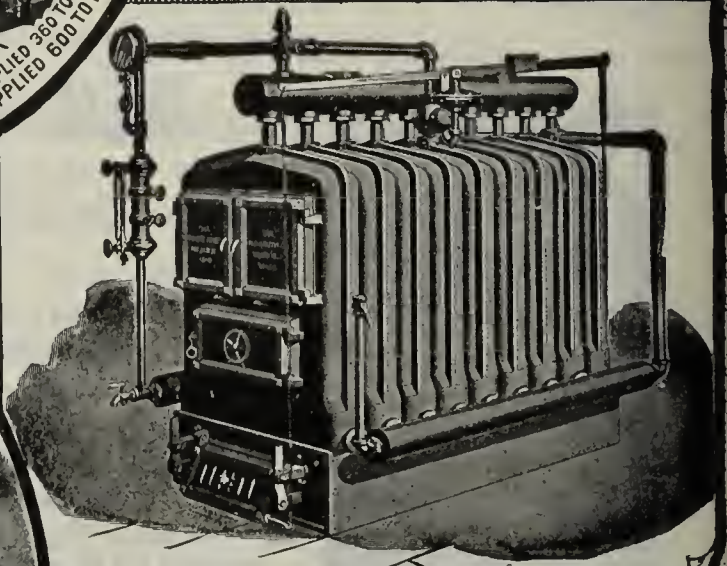
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CAL.



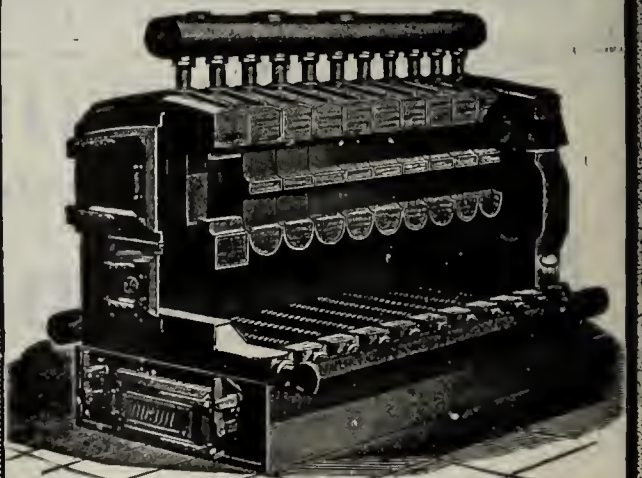
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Assuring you of my best wishes, I am,

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No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.
19	20 inches	51 inches	36 inches	\$40 00	\$8 00
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The **THREE** requirements for a first-class furnace are **ALL** Incorporated in the

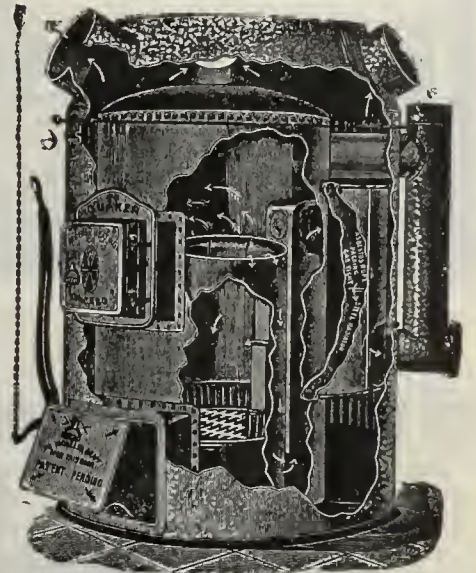
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Viz.:

ECONOMY in FUEL.
ECONOMY in TIME spent in caring for the fire, and **ECONOMY** in REPAIRS.

DROP US A POSTAL AND WE WILL TELL YOU ALL ABOUT IT.

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Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

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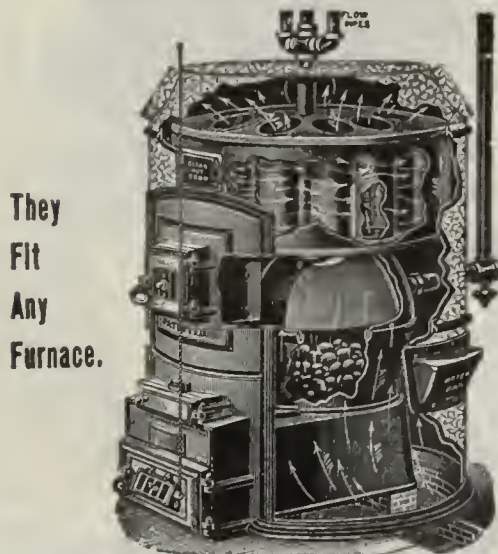
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Suitable for Large or Small
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Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

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The Champion Hot Water Combination Boilers.



Showing one method of application.
These Boilers are made in three sizes diameter,
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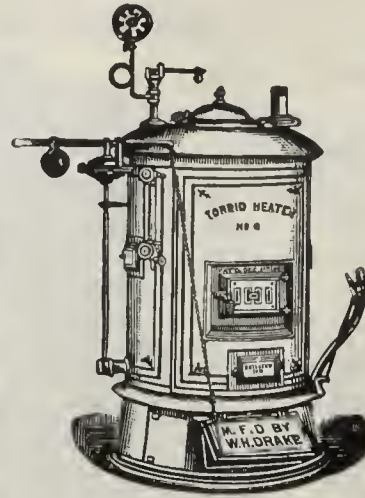
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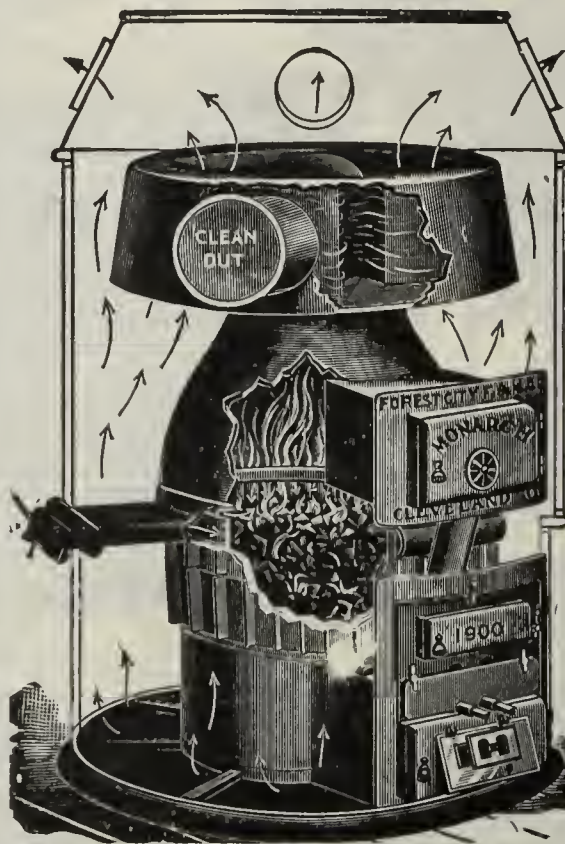
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FOR STEAM OR HOT WATER. *It is Safe, Being Tested to 200 Pounds.*
It is Easy to Manage and Keep Clean.
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It is Low in Price.



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Attractive in appearance, mounted strictly
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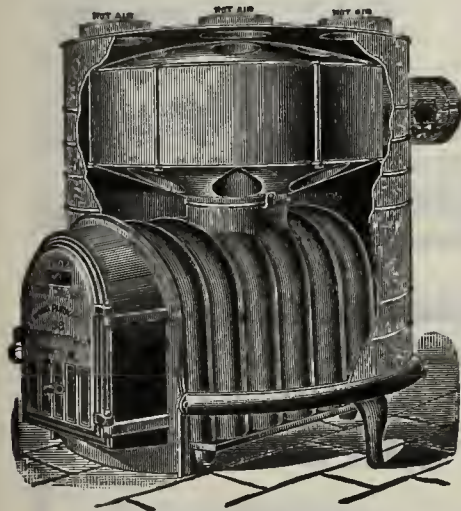
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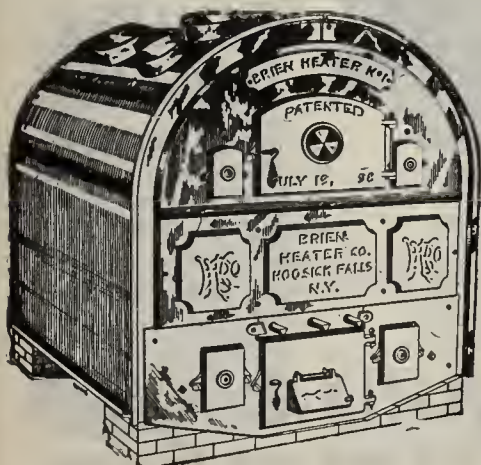


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PARTIAL SUMMARY OF CONTENTS
BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

Furnace Fittings—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

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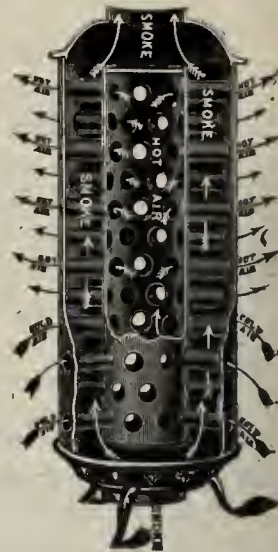
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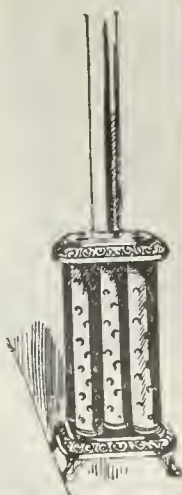
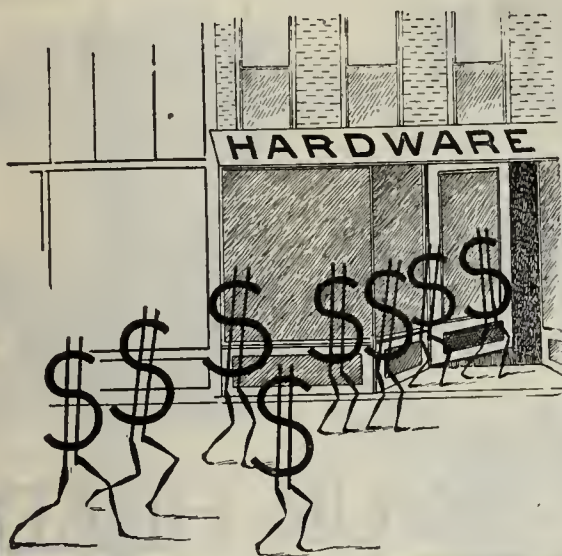
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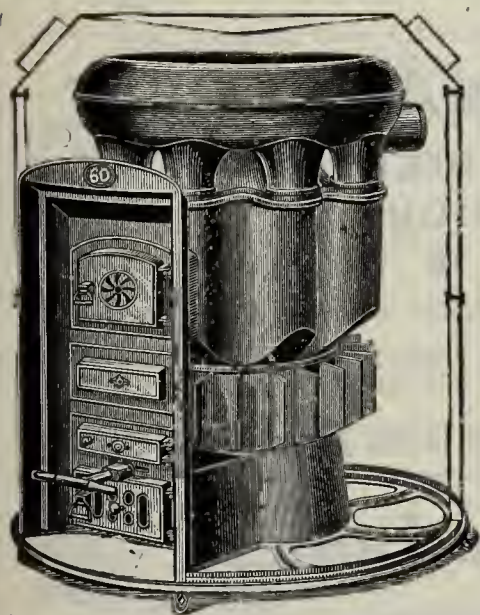
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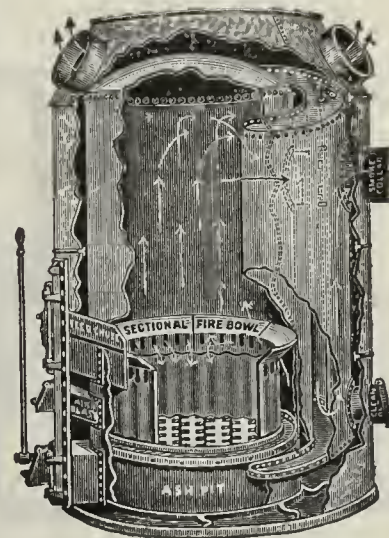
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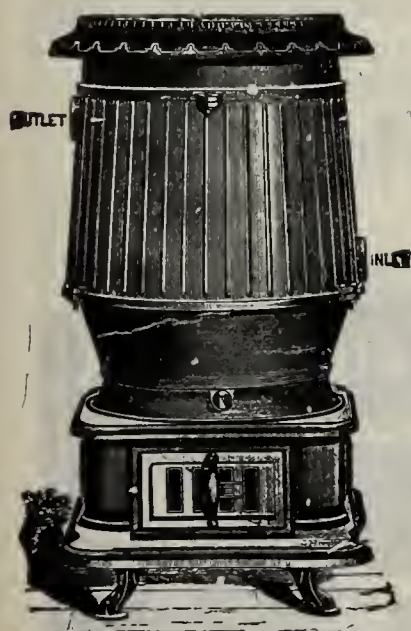
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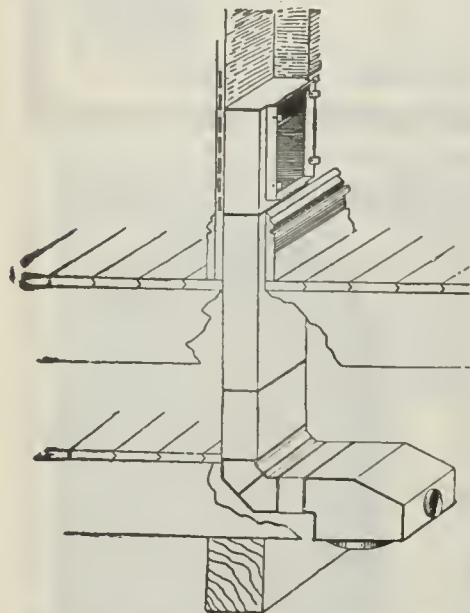
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THE TRUCK THAT
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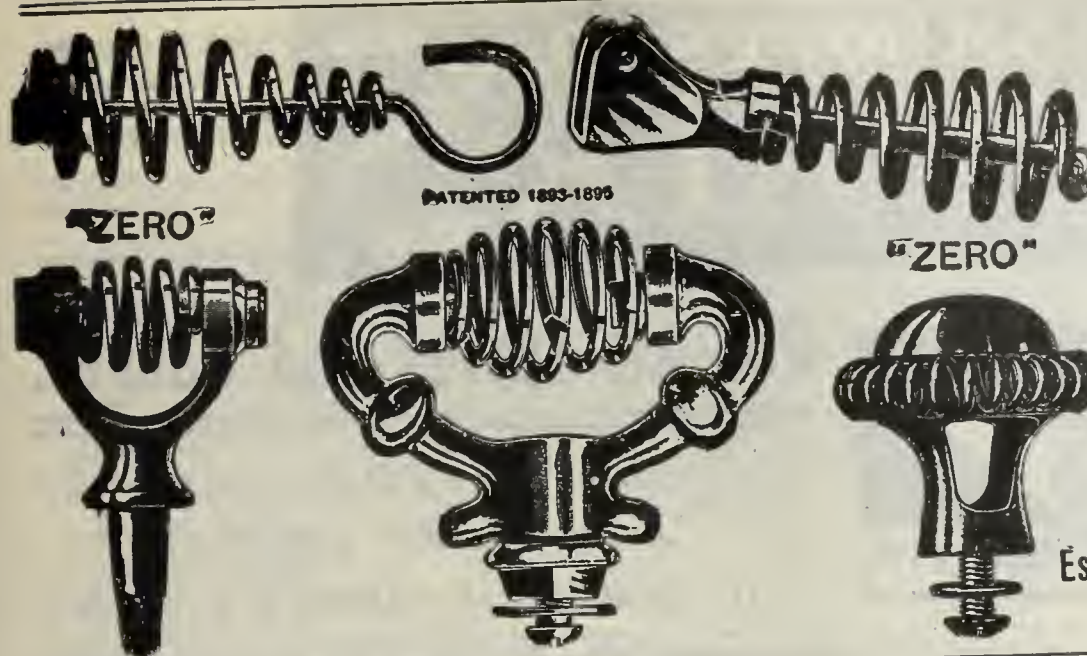
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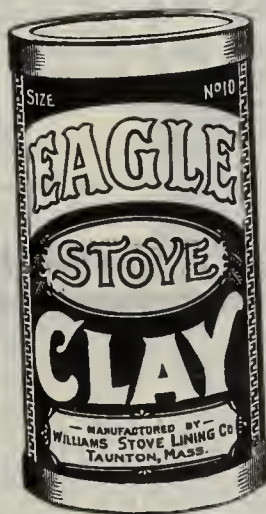
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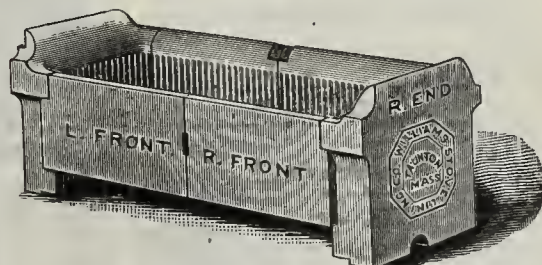
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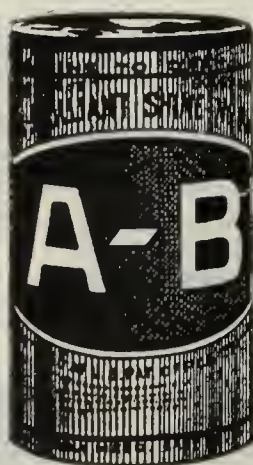
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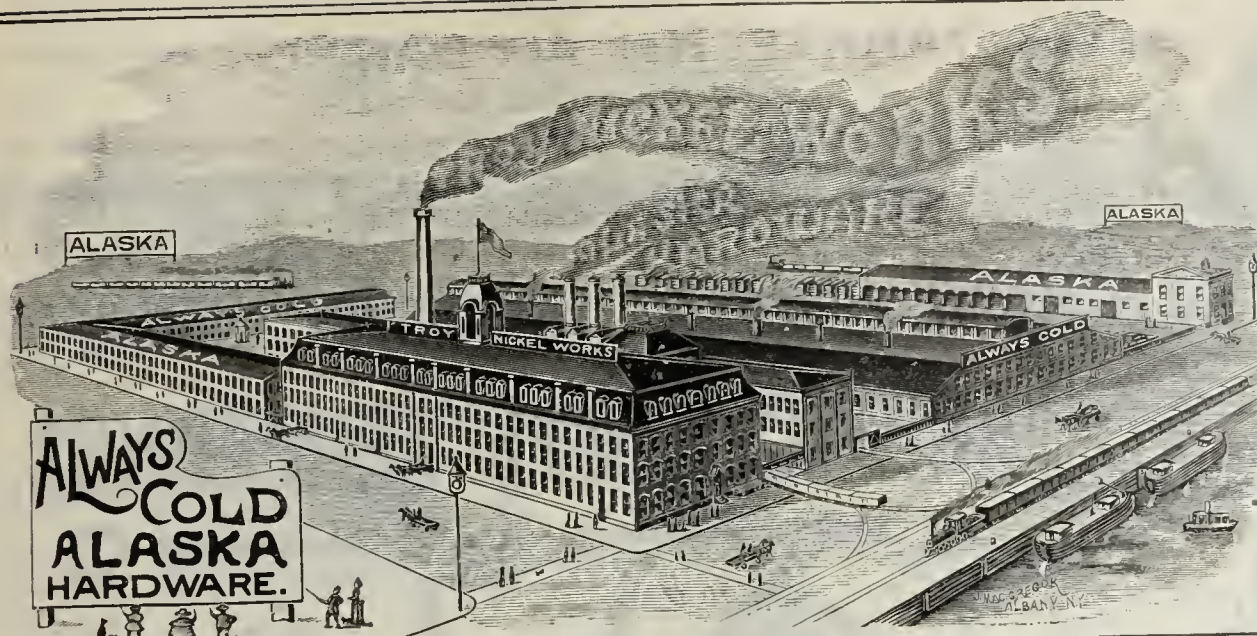
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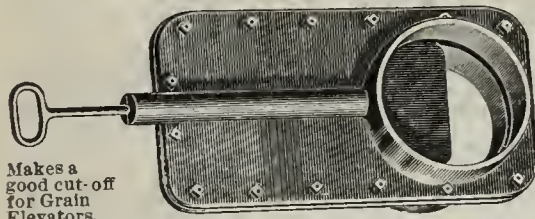
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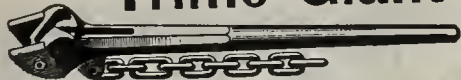
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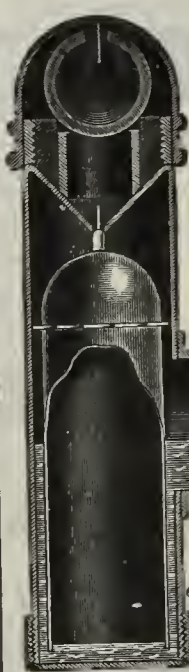
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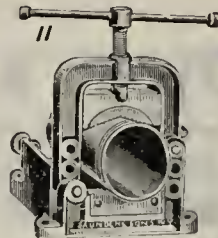
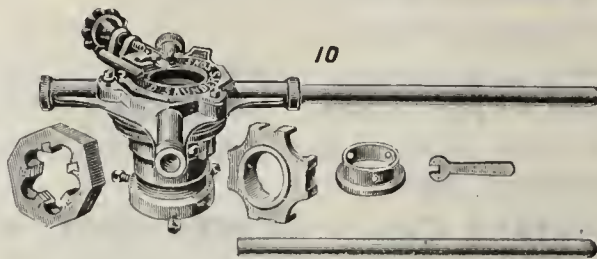
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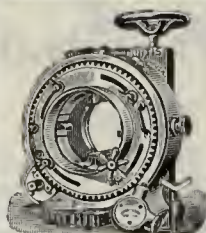
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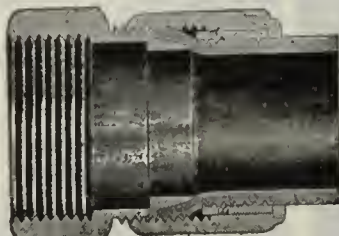
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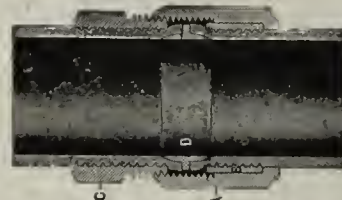
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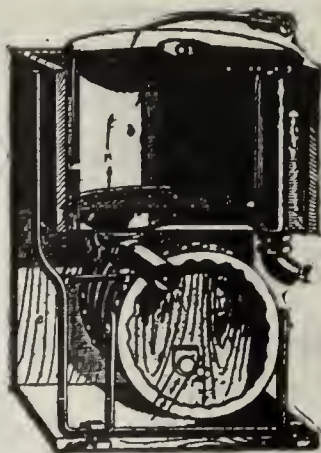
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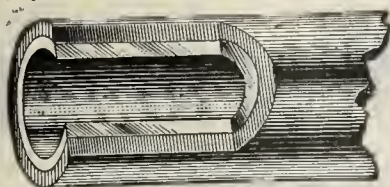
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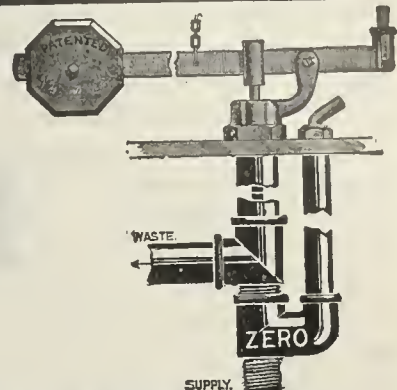
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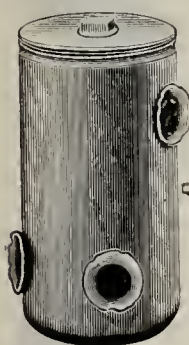
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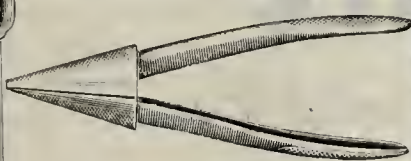
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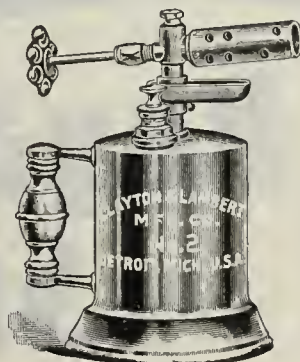
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Strained Relations in the Plumbing Trade.

The report which we give on another page of the meeting in Chicago of the National Committee of the Confederated Supply Associations on Wednesday and Thursday will command attention, relating as it does to efforts which have been made in many different forms to regulate and control the sale of plumbing goods so as to serve the interests of the trade immediately concerned. Our readers will recall that there was an interruption of the fairly harmonious relations which existed between the National Association of Master Plumbers and the Confederated Supply Associations when in September last the revised New York Conference Resolutions were abrogated by the association of the master plumbers on account of the failure of the arbitration provisions. The strained relations which thus culminated were an important subject for consideration by the meeting of the committee of the Confederated Supply Associations which has just been held. It is evident, however, that there has been no improvement in the situation so far as harmony of action is concerned, and the two bodies, both of much weight and influence, are even further apart. Possibly this may ultimately result in the finding of some line on which they can work harmoniously. Of the way in which this is to be accomplished there is, however, no immediate indication. The refusal of the Confederated Supply Associations to adopt the Cleveland Resolutions of the master plumbers and preferring instead to lay down a new platform in what will be known as the Chicago Resolutions seems, indeed, to widen the breach.

So far as manufacturers and jobbers are concerned there is little doubt that the action taken at Chicago will meet with general approval and not a little satisfaction, as the important trades represented thus take a more reasonable and tenable position in regard to the marketing of goods. Many, even if they have not always expressed the conviction openly, have realized that in order to satisfy the demands of master plumbers the manufacturers granted them far too much in the New York Conference Resolutions. In view of the radical and arbitrary demands made at that time this was necessary, if any basis for united action was to be found. The new resolutions have receded, it will be seen, from many of the restrictions on trade which were laid down in the old ones, while at the same time they

seem to give to plumbing interests all the protection that is requisite or desirable, and aim to limit trade to as narrow lines as are either reasonable or practicable.

The resolutions just passed seem to make all necessary and equitable restriction and to leave the way open for liberty of action on the part of manufacturers and merchants, which is fair to the contracting plumbing trade and their possible customers. The letter sent by the meeting to the president of the association of master plumbers is commendable in its spirit and in the stand taken in favor of trade protection and the arbitration of all trade difficulties. With the evident difference of opinion between the two bodies there is, indeed, an opportunity for strife in the trade, which will be productive of little good and might result in serious injury to interests which have been heretofore carefully conserved. It is a matter for congratulation that the prospect is that business in these lines is to be less trammelled than of late by restrictions which were so stringent that they became impracticable. A broader policy, such as is suggested by the action taken at Chicago, especially when accepted by the whole trade, will be attended with many advantages and tend to promote the general welfare.

The Copper Situation.

Interest in the copper situation still continues acute. While the leading copper interests maintain their prices stiffly and intimate that they do not propose to recede from their present position, the impression is growing more general that it will be impossible for them to hold the present high prices very much longer unless they decide upon a radical restriction in the output of their mines during the coming months. Even then, it is claimed, the Amalgamated Copper Company would find it difficult to maintain the present level of prices, in view of the fact that the independent companies are probably sufficiently strong to break prices, should they decide upon such a course. There are not wanting those who predict that the Amalgamated Copper Company may conclude to announce a sudden reduction in price, which will be so radical as to eliminate all competition on the part of the outside producers. It seems that some change must occur before very long. All the available statistics point to the conclusion that stocks of copper in first hands must be accumulating rapidly. Exports of the metal during the past few months have fallen off materially, as compared with the exports of the past few years, while a considerable amount of foreign copper has been imported into this country lately by consumers, who have been able to buy the metal abroad and land it here at a lower cost than they could purchase the domestic article. The consumption of copper in the United States does not appear to have exceeded that of last year or the year before, while the production has kept up to the same level. Consequently, there must be a big surplus laid up somewhere. It is this that induces the consumers of copper to confine their purchases to such amounts as are necessary for the filling of their current needs. The market for copper is a waiting one and the whole metal trade is look-

ing out for developments in this department. The cut of $1\frac{3}{4}$ cents in the price of copper wire, made this week by one of the leading manufacturers, is significant as suggesting a lack of confidence in the continuance of the present prices of raw material.

A Strong Iron Market.

The monthly blast furnace statistics published by *The Iron Age* show that the month of October was a record breaker in the production of pig iron. The output of the furnaces reached the great total of 1,400,000 tons, or at the rate of 16,800,000 tons per annum. The furnaces in blast on November 1 had a weekly capacity of 320,824 tons, based on their actual yield in October. This is an increase of nearly 13,000 tons over October 1 and is in excess of any previous record, the next highest being 314,505 tons for June 1 last. Notwithstanding the augmented output, the stocks of iron at the furnaces showed a decline from 351,593 tons on October 1 to 273,251 tons on November 1. This is the heaviest reduction in stocks made in a single month in a long period. That it was made concurrently with a great increase in production is a strong illustration of the remarkable activity now prevailing in the iron trade, and tends to strengthen the opinion that prices are not likely soon to recede. It is, in fact, well for consumers that the control of the market is in strong hands, as a little injection of the speculative element could easily send pig iron values considerably higher. The situation, moreover, promises to be further strengthened in November by the great difficulty still experienced by the furnaces in securing a sufficient supply of coke, owing to the serious shortage of cars. Many furnaces have been banked for this reason, and the production for this month will be curtailed to a considerable extent. This will affect the whole market for finished iron, but particularly the output of steel, the supply of which was not equal to the demand when everything was running smoothly in October.

The Higher Cost of Living.

According to *Dun's Review*, the cost of living has reached the highest point in ten years, and is 7 per cent. higher than at this time last year. This increase in the cost of commodities which go to make up the necessities of life has taken place notwithstanding the cheapening of many manufactured goods through improved processes and the absence of undue inflation in any class of goods. No artificial stimulus is responsible for the present high level of manufactured products. Aside from a rise in food products, due to short crops, the present condition of high prices is attributed entirely to prosperous business conditions and the full employment of labor at high wages. Prior to November 1 the maximum of values during the past ten years was reached in March, 1900, when the cost of living per capita per annum was \$97.40. The figure now is \$97.74, or 34 cents higher. This has been caused in large measure by exceptionally high prices for cereals and breadstuffs. Dairy and garden products also rule higher, as well as many miscellaneous commodities, but clothing is considerably cheaper. The cost of the necessities of life naturally tends to advance in proportion to the ability of the people to consume. Fictitious values sometimes prevail, but these are usually of short duration and are generally eclipsed by the preponderance of normal conditions in the general market. Under the circumstances it is fortunate that industries are flourishing and that full employment is provided for the large bulk

of the wage earning population; otherwise the greater cost of living would be likely to bring considerable distress to the class referred to during the coming winter. Meanwhile the average citizen has discovered that it costs more to live than it did a year or two back. He finds it increasingly difficult to fill the market basket, pay his rent and meet the necessary expenses of his family on the same income that sufficed for all his needs in past years, for it is not in evidence that wages generally have risen in proportion with the higher cost of living.

Cheaper Fuel.

In view of the wonderful natural resources recently opened up in the Texas oil fields one need not be a prophet or the son of a prophet to foresee a remarkable industrial development of the entire South and Southwest in the coming years. The use of oil as a substitute for coal in the production of steam for power purposes has already received a decided impetus from the discovery of what appears to be a practically unlimited supply of petroleum in a region in which manufacturing and other industries have been handicapped hitherto by the high cost of coal and wood used for fuel. Railroads and other large users of steam power in territory within ready reach of the new oil fields are expending or preparing to expend large sums in the building of boilers upon plans especially designed for the use of oil or are altering existing boilers so that they can be utilized for the liquid fuel, and many of the smaller users of power are preparing to adopt the cheaper and more readily obtainable fuel. It is easy to see what an important bearing this revolution in fuel is likely to have upon the industrial future of the sections lying within a reasonable distance of the oil fields. But the wider adoption of oil fuel, not only for power but also for heating purposes, is not likely to be confined to the territory referred to. When the pipe lines are completed from the oil fields to the Gulf ports the producers will be able to ship the oil by water and lay it down at any of the Atlantic ports at a cost far below that of coal. Under the circumstances it is not unreasonable to expect not only an era of cheaper fuel, but also other changes which may have important significance in industrial matters.

The Metric System Again.

United States Consul Skinner, at Marseilles, France, records an incident which occurred under his observation not long ago, as illustrating the desirability of the adoption of the metric system in the United States, which, except Great Britain, is the only important manufacturing nation still employing the old system of measurements and weights. The United States naval collier "Scindia" arrived at Marseilles with her boiler tubes burnt out, and under urgent orders to proceed to Manila. The vessel went to the French port, as it was considered the place best equipped to make the absolutely essential repairs. Every facility was offered for the prompt refitting of the boilers by local contractors, but it was found that all the tubing in the city had been manufactured in France, and according to metric dimensions, and none of it could be utilized in the "Scindia's" boilers without forcing the shells. There was the variation of a hair's breadth in the dimensions, but it was sufficient to prevent the work from being accomplished, and orders had to be cabled to the United States for material, which was sent over in one of the German steamers—probably at express rates—and delivered at Naples, where the repairs were eventually carried out. The

ship was delayed two or three weeks, in consequence of the fact that her boilers had been built upon a scale of feet and inches, while European tubing was manufactured according to the metric system. This is another example of the disadvantage at which American manufacturers and their British *confrères* are placed abroad by their continued adherence to British standards of weight and measurement.

Ventilating a Tunnel.

For a long time passengers arriving at the Grand Central Depot in New York City have endured no small amount of annoyance from the foul air in the tunnel through which the trains enter the city. This annoyance has often been brought to the attention of the authorities, and the Board of Health, after discussing the problem with the engineers of the railroad company, at length have taken steps with a view to removing the cause of complaint. A good start has now been made in the transformation of the hot, gaseous, smoke laden Park avenue tunnel into a well ventilated subway. The problem has received the attention of skillful engineers, and it is hoped that their efforts will be crowned with even greater success than they anticipate. A more difficult problem than that under consideration has seldom been brought to the attention of the ventilating engineer, nor is the particular work necessary with such a problem often engaged in under conditions which require so much skill and care on the part of the workmen. The tunnel is being used by the trains all the time, and the space allotted to the workmen is naturally restricted. The task, however, is said to be progressing satisfactorily, and the engineers are confident that eventually there will be ample opportunity for fresh air to enter the tunnel and the foul air to be removed.

A marked increase is noted in the shipments of American anthracite coal to Europe during the past few months. Curtailment of the European supply, owing to labor troubles in the Welsh and French coal fields, has stimulated the Continental demand for American hard coal, particularly in Germany, and low ocean freight rates, with comparatively light grain exports from this country, have enabled the American anthracite coal interests to take advantage of the situation and secure some good sized orders for their product. It is understood that the British hard coal interests are not inclined to dispute the Continental markets with the American producers, as the Welsh supply of hard coal is limited and is little more than sufficient for domestic manufacturing purposes. Consequently a promising field seems to be opening up for the marketing of the surplus product of the American anthracite mines.

At a meeting of the trustees of the Carnegie Institute of Pittsburgh on Tuesday Andrew Carnegie announced his decision to add \$2,000,000 more to the already large gifts he has made to that institution and to the new polytechnical school to be established in Pittsburgh through his munificence. He will increase the endowment fund of the proposed school by \$1,000,000, making it \$2,000,000. This will give the school an annual revenue of \$100,000, which Mr. Carnegie thinks is enough for it to start with. An additional endowment of \$1,000,000 has also been made by Mr. Carnegie to the Carnegie Institute, making a total of \$6,000,000 given to that establishment. The original appropriation made for the proposed Carnegie Technical School was conditioned upon the provision by the city of a suitable site. This condition has been filled in the purchase by the city of 11 acres of land at the south entrance to Schenley Park, adjoining the Carnegie Institute. The erection of the necessary buildings upon this site will be begun at

an early date. The buildings will follow the design of the Worcester Technical School of Worcester, Mass., and the general plan of that institution will be followed in the Pittsburgh school. Mr. Carnegie has given *carte blanche* in the erection and equipment of the necessary buildings, without naming any specific sum. This last benefaction will bring Mr. Carnegie's gifts to the city of Pittsburgh up to \$15,000,000.

THE NEW AUSTRALIAN TARIFF.

The Australian mail, received this week, brought the details of the new tariff introduced by the Australian Federal Government, which went into effect on Tuesday, October 8. The new tariff institutes ad valorem duties ranging from 15 to 25 per cent., and in many instances a specific duty representing a broader measure of taxation. So far as the interests of the United States are concerned, and as significant of the feeling of the Australian Commonwealth, it is gratifying to observe that there are no provisions giving preference to English goods, but that the tariff applies impartially to importations from whatever source of sale or manufacture. The United States thus has an opportunity to cultivate the Australian market on equal terms with all other countries. The importance of the Australian trade to this country is indicated in the fact that last year it amounted to \$20,000,000. The new scale of duties will be collected from October 8, and for any items that may eventually fail to pass the legislature, or which are reduced, a rebate may be claimed. In the event of higher schedules being adopted, if any are made, no additional payment of duty will be required.

GALVANIZED IRON.

Among the articles on which duties have been imposed are plain galvanized iron sheets or plates, which are taxed at 15 shillings per ton, and corrugated galvanized iron at 30 shillings per ton. Hitherto these materials have been admitted free in New South Wales and Victoria. South Australia has had a duty of 30 shillings a ton on corrugated galvanized iron, and Queensland has had a duty of 40 shillings. Now, with the one Australian market, this duty is considered sufficient to justify the erection of galvanized and corrugating plants in Australia, since black sheets are admitted duty free. Australia is, perhaps, the world's best market for galvanized corrugated iron, as the majority of country houses, small villas, farms, &c., are roofed with it.

In connection with the duty on galvanized iron the new tariff bill provides that so soon as the manufacture of this material has been sufficiently established in the Commonwealth, a duty may be attached by proclamation of 10 per cent. ad valorem on plain galvanized iron and 15 per cent. on corrugated.

Among other dutiable articles named in the new tariff are sheet lead and lead pipe, on which there is a tariff of 2 shillings 6 pence per cwt. Lamps, lamp ware, lanterns and lamp stoves, and all parts thereof, are taxed at 20 per cent. ad valorem. Roofing slates and unwrought slate slabs are subject to a duty of 15 per cent. ad valorem.

GOODS ADMITTED FREE.

A great many kinds of metals and metal manufactures are classed under "special exemptions" and are admitted free. These include machine tools for metal working, tinsmiths' tools, tin plates, black plates and sheets, brass and copper in bars, sheets, pipes and tubes and scrap, aluminum, bronze and nickel sheets and scrap, wrought iron and steel tubes or pipes, cream separators and testers, crucibles, &c.

The operation of the new Australian tariff will be watched with special interest, in view of the diversity of policies which were pursued in the separate colonies, and the questions which are awaiting solution as to the effect of the tariff in producing revenue, and at the same time developing the manufactures of the country. It remains to be seen whether or not the tariff will be modified in important respects, but advices received indicate that it will probably remain in force with only minor modifications.

A FEW THINGS ABOUT FURNACES.

BY A. COLLOQUY.

He was one of a corps of intelligent men who made our establishment popular in our line of trade. His work was of a clerical character, yet it brought him in contact with the practical men in all the different lines of work done by our establishment. I am one of the practical men and that is the reason that we had our little chat on the heating of his house. He had come to talk to me on a matter of business and incidentally asked if I thought that by running his kitchen range hard and having a good stove in his parlor he would be able to heat the dining room in between and make upstairs warm enough for his wife and two babies to live in. He also said that he got absolutely no satisfaction from his furnace. He had seen no end of plans of buildings and of work laid out for our men to do, and should have known how to draw a rough plan of his own house. I invited him to do this, and the caricature that he made in the attempt nearly gave me an attack of "psychical epilepsy."

In consequence of his failure to get his house warm he condemned the furnace system of heating. I was able, however, to find out that the cold air was taken from the west side of the building, and just north of it was a little extension to keep the wind off the back kitchen door and support the bathroom on the floor above, giving the bathroom the coldest exposure in the building. I explained to him that any but direct west winds would cause an eddy in this little angle and have a tendency to draw the air out of the furnace through the cold air duct, whereas a supply of air should be driven into it to be heated and sent through the pipes and registers.

Evidently he grasped the idea that in order to make heated air come out of the different pipes and registers cold air must go into the furnace at the bottom in some place. He told me that a landlord having houses in the same neighborhood had assured his tenants that a cold air box was something of a nuisance and an unnecessary expense and that all the fresh air they needed in their houses in the middle of winter could be secured by opening the cellar window for an hour in the morning. Our friend concluded that there was some sense in that, because it would not be desirable to have the cellar window open 24 hours out of the 24. I quoted to him the hymn, "I Need Thee Every Hour," and told him that if he wanted the hot air to come up in the registers every hour he would have to have cold air going into his furnace every hour. I also suggested to him that if a furnace got a continual supply of air from some place it need not necessarily be from a cold air duct leading from out of doors. I told him that the air supply was needed in accordance with a law of nature which was as old as the hills, but that many people attempted to be economical by shutting off the cold air when the weather got colder so they would not have to run their furnaces so hard.

All furnacemen can find some satisfaction in the fact that those who are foolish enough to pursue such a custom pay the penalty, for the cold air supply bears a relation that never changes to the hot air flow. If they shut off the supply of air, nature, never to be denied, will take the air supply through the cracks and crevices around the windows and doors of the most exposed and coldest room and pass it down through the register pipe that ought to be sending up warm air. The air that is thus supplied to the furnace then mingles with the hot air and is distributed through the heating pipes to rooms on the side of the building that are less exposed, and toward which the natural air pressure carries the heated currents.

I must say that my fellow worker was not in just the frame of mind to absorb the valuable information given. He had no taste for making a correct plan of his house, with the size of the hot air pipes and the dimensions of the cold air box. But when this truth was driven into him stronger he agreed to take up the task. He was of the opinion that the whole furnace system was a fake and that it would be better for him to put up some stoves, where he could see the fire and know that he was hot whether he felt so or not. Evidently his theory is that seeing is believing, and he is not aware that feeling is

the naked truth. I was able, however, in the end to get him to agree to make a plan of his house so that I could give him the causes of his troubles and the remedy for them. I told him he was living in the wrong age; evidently he belonged to the age when a man should have gone back into a cave in the winter time and had a fire built in front of it to keep the cold out.

A furnaceman who understands furnace heating may have some difficulty, just as I have had, in getting his customer to understand what he must do in order to operate his furnace so as to get satisfactory results. But once educated he is a valuable assistant in extending the demand for furnace heating. The first principle that follows the laws of nature and never can be violated without incurring the penalty is that to have hot air flow from a furnace cold air must be supplied to it with the same freedom that the warm air is expected to flow. I have said on other occasions that if either the coal or the cold air were to be omitted the furnace would give better satisfaction without the coal than it would without the cold air supply.

Now, many furnacemen absorb from their customers the idea that a furnace can have too much cold air, and in consequence they make the supply pipes smaller than they should be. After a good many years' experience I am satisfied that if the cold air supply duct has an area equal to the area of the hot air pipes, better satisfaction will be derived from the heating system than if it is smaller. In the early fall and late spring, when a fire is necessary, it is apt to make the house too hot unless there is abundance of cool air supplied to the furnace; but as the winter advances and the air is naturally colder it is a simple matter to close the damper and reduce the supply and to break the force of the wind blowing into the cold air box and yet have enough air going in all the time to fill all the hot air pipes of the furnace. It may require a little study on the part of some of the younger furnacemen to familiarize themselves with these principles so that they can explain them readily to their customers, but when they have once mastered them there is no need for anybody in their community to go back in a cave in winter and keep warm by building a fire in front of it.

The Simpson Stove and Manufacturing Company.

The Simpson Stove & Mfg. Company, whose present works are located at Liberty avenue and Twenty-sixth streets, Pittsburgh, Pa., have decided to remove their plant to Washington, Pa., where a very favorable site of land has been obtained. At a meeting of representatives of the firm and the local Board of Trade, held at Washington, on Saturday, November 9, plans and specifications for the new buildings were accepted, and a new Board of Directors for the Simpson Stove & Mfg. Company were elected, as follows: W. J. Gower, S. S. Manneil, Jr., of Canonsburgh; W. L. Clark, George A. Simpson and H. Prescott Simpson of Pittsburgh. The Simpson Stove & Mfg. Company were established in Pittsburgh about 11 years ago, and their present plant is entirely inadequate to handle their growing business. The concern do not own a foundry, but have been buying their castings in the open market. The new plant at Washington will include a modern foundry, and make the concern independent of the open market on castings. It will be modern in every respect, and will be equipped with new labor saving machinery throughout. In addition to the lines of goods now made by the concern, consisting of gas ranges and gas utensils, the manufacture of steel ranges will be undertaken. Work on the erection of the buildings will be begun at the earliest possible moment, and they will be pushed to completion as fast as possible.

THE CULTER & PROCTOR STOVE COMPANY, Peoria, Ill., have awarded a contract for the addition of another story to their plant at the corner of Water and Fayette streets. The addition has been rendered necessary by the large increase in the company's business, which has made their present facilities too small for their requirements.

HEATING GOODS IN MEXICO.

The sale of American heating and cooking apparatus in Mexico, owing to its nearness to the United States, might be looked upon by manufacturers as a reasonable expectation, and it is probable that some effort to cultivate this field may be rewarded. Before any considerable amount of business is done, however, it will be necessary to make a patient and energetic canvass for the introduction of the goods, and this must partake largely of an explanation of their merits, operation and use. The Mexicans have been satisfied with their primitive kitchen facilities, and have had but little need for heating apparatus, so that they know nothing of the convenience and comfort of the modern American kitchen range or of the oil and gas heaters and small coal and wood heating stoves that would contribute so much to their comfort when the northerly blow across the country. The need of heating apparatus is greater on the higher levels, many of the villages being located on plateaus several thousand feet above the sea level. A correspondent in Mexico makes the following comments on the attitude of the people of that country toward these conveniences:

In the mountain regions, during cold weather, it is probable that hot air furnaces might be used in some of the modern residences. There is certainly no demand for them at present, and I doubt if the people know anything about their use. The houses are quite generally of a primitive character, and even those that are pretentious are built with only one story, even to the extent of covering considerable ground, rather than to utilize a second floor, which would make it necessary to climb the stairs. The item of labor is not a matter of consideration, as it is in the United States, particularly when the Indians will carry a 200-pound sack of ore to the top of a shaft cheaper than it could be done by machinery, if the cost of the plant is reckoned.

There are plenty of modern houses on the plateaus, but, owing to their construction, they could hardly use furnaces. But among this class there should be a good demand for the cheaper and neatly finished kerosene oil heaters used in the United States. However, kerosene oil is retailing at 80 cents per gallon in Mexico City. The City of Mexico and several others are at an altitude of from 5000 to 7000 feet above the sea level, but even those who inhabit these elevated regions would require some one to educate them up to the occasional use of oil stoves when there is a norther on the coast.

Apparatus for drying fruit is unnecessary in this hot country. Evaporation is very fast on the high levels except during the winter season, which about corresponds with April in the United States. All who intend to do business in Mexico must remember that the people here who live in a really civilized fashion form but a small percentage of the total population. By far the greater part would not know what to do with an iron stove if they had one. The better classes, while more easily taught, would need some one to explain the convenience and the use of both heating and cooking apparatus if they purchased it.

Vaporizing Gas Stoves.

Some persons complain, says a British architectural journal, that gas fires cause an uncomfortable dryness of the atmosphere of a room. A series of experiments has been conducted which proves that the atmosphere of a room is not rendered more dry by the use of a gas fire provided with a flue than by the use of a coal fire, and the experimenter is of opinion that the alleged dryness is always due to a trace of the sulphur compounds in the products of combustion escaping into the room through a defective flue. Where the flue is perfect and a strong up draft is maintained no such feeling of dryness is experienced. To meet all requirements, however, most of the gas stove manufacturers now manufacture a stove fitted with a well to contain water, the water being slowly vaporized by the heat from the fire. Vaporizing fires appear to be rapidly growing in popularity, and are very serviceable for sick rooms where a moist warm atmosphere is required. A shallow pan of water

placed in front of an ordinary incandescent gas fire may, of course, be used instead of a specially constructed vaporizing gas stove but is not so convenient.

P'S AND Q'S AND A, B, C'S.

Minding their p's and q's keeps some of the old fellows in the stove business pretty busy, but they can spare time for a smile over the scheme presented by Carolyn Wells in the *Youth's Companion* to make the little fellows know their A, B, C's, particularly as the illustrations and rhymes accompanying some of the letters have been inspired by staple articles in the trade. A picture of an andiron, with the following verses, introduces the letter A:

A was an Andiron
So tidy and bright,
Who kept up the fire
By day and by night.
Amiable Andiron!

A picture of a furnace, somewhat novel in appearance, accompanied by this rhyme indelibly impresses the letter F upon the mind of the learner:

F was a Furnace
Who nearly went daft
When they asked him to draw
A check and a draft.
Funny old Furnace!

The letter R is illustrated by a range and this verse:

R was a Range
Who said, "It is strange.
My chimney flue,
Why can't I fly, too?"
Ridiculous Range!

An illustration of a stovepipe introduces the letter S with these lines:

S was a Stovepipe
Who cried out, "Oh, dear,
I've just bumped my elbow.
'Tis broken, I fear."
Sorrowful Stovepipe!

Reliable Vapor Stoves and Ranges.

We have received from the Schneider & Trenkamp Company of Cleveland, Ohio, and Chicago, Ill., a copy of the 1902 catalogue which they have issued relating to Reliable vapor stoves and ranges. It is a work of 98 pages profusely illustrated and bound in paper covers. This is the fifteenth annual vapor stove catalogue which the company have issued, and in it they state that they have grouped together a line of stoves and ranges, which have established an enviable reputation in the stove market. The policy of the company always has been to progress; to introduce new ideas and improvements possessing real merit, and by giving constant and careful attention to every detail in manufacture, they purpose maintaining the excellent qualities claimed for their productions. In the early pages of the catalogue 11 reasons are given why the Reliable single generator is the best. These are followed by illustrations showing various forms of the generator, from 1890 up to that for 1902. Important points to bear in mind when ordering repairs for a Reliable Process stove are presented, together with a price-list of repairs of various kinds. A Reliable stove is then illustrated and described in its various modifications, followed by a consideration of individual burners, torches, ovens and miscellaneous goods. A telegraphic code, which dealers will find convenient when ordering goods by wire, is a feature of the closing pages.

The company announce that in addition to their vapor stoves and ranges they make a very complete line of steel ranges, oil heaters, hotel gas ranges and gas cooking and heating appliances of all kinds.

THE KANSAS CITY FURNACE PIPE COMPANY of Kansas City, Mo., have been incorporated with a capital stock of \$5000 to make Hot Air Pipe, Elbows, &c.

BRYAN VACUUM MOLDING MACHINE.

At the eighth annual meeting of the Philadelphia Foundrymen's Association, on November 6, H. M. Baldwin of the Power Specialty Company, New York, read the following paper on the Bryan Vacuum Molding Machine:

What boy has not made a sucker out of a scrap of moistened leather and a bit of cord to lift stones and thus become familiar with the power of a vacuum in the most simple form. This principle forms the basis of the Bryan vacuum molding machine.

The first office of a molding machine is to draw the pattern from the sand more quickly, surely and accurately than if done by the most skillful molder. The natural way to do this is to lift the pattern out of the sand, leaving the sand in the flask intact. That most molding machines have been constructed so as to lower the pattern from the sand, leaving the latter suspended above, has been undoubtedly due to the failure of ingenuity to devise the method worked out by Mr. Bryan.

By lifting the pattern not only is the operator able to watch his work, but the danger of damage to the mold by dropping sand is entirely eliminated and time taken for repairs is saved. The sand in a bolt hole, for instance, would, if cracked, fall out by its own weight when the pattern is lowered away from the mold, whereas if the pattern were lifted its own weight would keep the sand in place.

The Bryan vacuum molding machine, therefore, is primarily a machine to take hold of a pattern by means of a sucker and lift it truly out of the sand. It consists of a vertical sucker rod, supported by a frame which swings on vertical hinges over a molding bench. It may be fastened to a post or column, or to the wall.

The sucker rod glides up and down in sockets, forming part of the outer extremity of a swinging frame, and is worked through a lever having a projecting handle, which is grasped by the operator when he is ready to draw his pattern.

At the lower extremity of the sucker rod is fastened the sucker head, which is formed of a soft rubber disk held in place by an annular metal plate. An opening in the center of the sucker head communicates through the sucker rod, which is hollow, and through a flexible connection, made of rubber hose, at the top with a foot power vacuum pump which is attached to the brackets supporting the machine. In case a vacuum system exists in the foundry where the machine is located the foot pump is dispensed with and the hose at the upper end of the sucker rod is connected directly to the vacuum system. Otherwise the foot vacuum pump is worked by the operator, who, with a slight effort and without moving from his position, gives one downward stroke of the pump with his foot just as he brings the sucker head into service by lowering it into contact with the pattern or board on which the pattern is mounted.

To secure a large flat surface for the sucker head to readily grasp the pattern is usually split and mounted on a board or wooden plate, which plate is provided with bushed holes or pins to fit dowel pins or holes on the flask in order to insure the proper matching of the two parts of the mold.

In operating this machine the pattern board is first laid flat on the molding table with the pattern up. A flask is then laid over this, allowing the dowel pins to enter the holes in the board. The flask is then filled with sand in the usual manner and rammed by hand or with a squeezer, the top flushed off and a bottom board laid on. The flask and two boards are then turned over by hand and allowed to rest on the molding table, with the pattern board on top. The pattern is then jarred to loosen it by striking the board to which it is attached with a mallet, and the operator grasps the handle on the lever and draws down the sucker rod until the sucker head comes in contact with the pattern board. In descending a valve or cock on the sucker rod strikes a tappet and opens communication between the sucker head and the vacuum pump. The sucker grasps the board carrying the pattern and the operator throws the lever up, and thus, assisted by an affixed counterweight, the sucker head draws the pattern quickly and truly into midair. At the proper distance from the mold the cock on the sucker rod is again thrown by a tappet, thereby disconnecting the sucker head from the vacuum and opening communication between the sucker head and the atmosphere, thus releasing the pattern and board, which fall readily into the hands of the operator, who has in the meantime let go of the handle by which he raised the sucker rod.

A small dash pot attached to the frame and the lever keeps the sucker rod from flying up too quickly. The flask containing this portion of the mold is then placed

on the floor and is ready to receive the other part, which is prepared in a like manner.

More than one operator can use the same machine, as the length of time required for drawing the pattern is considerably less than that required for filling the flask. The machine is easily swung to and fro, so as to be used by each man as he is ready to draw.

A pneumatic rapper is often attached to the sucker head, receiving its supply of air through a small flexible connection, and fitted with a cock, also controlled by tappets, so as to put the rapper in operation automatically only while the pattern is being extracted from the sand.

It will be seen that the machine is extremely simple in construction and operation. A few hours' practice will enable a green hand to make a perfect mold, and rapidity of operation follows very soon.

The preparation of the pattern for the machine requires very little expense, as almost any form of wooden pattern may be used by merely mounting it on the match board. Once attached to boards in the pattern shop the change may be made on the machine from one pattern to another as often as desired and without loss of time, which advantage is very great when but a few castings are required from any one pattern. As many flasks can be made from any number of patterns in the same time that the same number of flasks can be made from one pattern.

The saving in the doing away with the stripping plates also gives the machine a decided advantage over other forms, and opens up opportunities for machine molding which would otherwise be lost.

The use is not confined to any particular size of flask, but may be described as general for any style of bench work.

By mounting the two parts of a split pattern side by side on the same board two castings from but one pattern may be made with one operation, as the impression made by one half in the cope covers over the impression made by the other half in the drag, while, to carry this same idea still further, one half of a symmetrical pattern may be used with equal facility to form a complete mold.

In addition to green sand molding this machine finds a useful field in core work by using it to lift the boxes from complicated cores.

The machines are made in two styles, one of which may be set up in any foundry by attaching it to a post or column, or even a wall; the other is self contained. They are furnished with or without the foot vacuum pump or pneumatic rapper, and all the special features are fully covered by letters patent.

Although they have been on the market but a short time, the interest which they have already created, as proved by the activity for trial orders, encourages the builders to believe that they are destined to satisfy a long felt want.

ODD PLATES.

At the annual meeting of the stockholders of the Monarch Stove & Mfg. Company, Mansfield, Ohio, recently held, the following Board of Directors was elected for the ensuing year: A. B. Martin, Emmett C. Baxter, R. B. Maxwell, B. A. Baxter, Edwin D. Baxter, L. J. Bonar, J. C. Liser. The board organized by the election of A. B. Martin, president; R. B. Maxwell, vice-president; Emmett C. Baxter, secretary and general manager, and B. A. Baxter, superintendent. A dividend of 4 per cent. on the stock of the company for the eight months on the present year's business was declared, and the balance of the profits was ordered carried to the surplus account.

A LARGE addition is being made to the Excelsior Stove Works, at Quincy, Ill., at a cost of about \$40,000. The new building will adjoin the present main building of the company, and will be of the same width and 270 feet long.

THE South Indianapolis Improvement Association of Indianapolis, Ind., announce that they have secured an Eastern Stove and Range foundry for the new industrial suburb of South Indianapolis. The concern, it is stated, have a capital of \$500,000 and employ 400 men.

THE SCHILLINGER STOVE COMPANY, Syracuse, N. Y., have brought an action against the city of Syracuse to recover \$500 for damages done to the company's stock by reason of the overflowing of a street sewer. It is alleged that the sewer was improperly constructed, and that the city officials had full knowledge of the fact.

THE H. ADLER COMPANY, Pittsburgh, Pa., are attracting the attention of buyers of gas goods to their line of Acme Gas Stoves and Grates, by the distribution of a card printed in colors, showing two children standing in front of a gas grate enjoying the warm glow.

THE ENTERPRISE STOVE COMPANY, Vincennes, Ind., call attention in a four-page folder to the merits of the Domestic Star Steel Range and the Star Radiator Parlor Heater. The former is made in a variety of styles and sizes and embodies the latest improvements. The Heating Stove is made in two grades and is constructed on entirely different principles from those involved in "air tight Heaters." By removing the urn and attaching a hot air pipe a Double Heater is provided.

A LEAFLET, which is being sent out by Gorman & Millett of 46-48 West Market street, Wilkes-Barre, Pa., calls attention to the Wrought Steel Ranges which they manufacture in all sizes. The point is made that these Ranges are "built like a battle ship, for durability and service, and to stand hard knocks." The goods are turned out in sufficient variety to meet every requirement. In addition to Ranges the manufacturers turn out Steam Tables, Warming Closets, Plate Warmers, Hot Closets and Mammoth Coffee and Tea Urns. Contracts are taken for the equipment of kitchen cooking apparatus for hotels, restaurants, steamships, private families, &c.

THE COLE MFG. COMPANY of 3218 to 3238 Western avenue, Chicago, Ill., are erecting a fire proof warehouse at their plant, which is estimated to cost about \$30,000. The structure will cover an area 150 x 50 feet in size and will be three stories in height. The company expect to add a great deal in the way of equipment in order to meet the growing demands of their business. They have a surprise in store for the trade in the way of a new Range, which they expect to bring out next season.

THE GALUSHA STOVE COMPANY, Rochester, N. Y., are sending to their friends in the trade a folder calling attention to the Norman Stoves and Ranges, which they manufacture in great variety. The company point out to dealers that if they do not order very soon they will be too late to get in line with other up to date merchants, "who are now reaping a golden harvest by handling the Norman Stoves." The company intimate that if the dealers are as wise as they think they are they will put in an order for at least a trial shipment, or send for the company's finely illustrated catalogue.

In an article appearing in our issue of October 26, giving a review of the Stove dealers' supply catalogue of Kramer Brothers, proprietors of the Dayton Stove Repair Works of Dayton, Ohio, the statement was inadvertently made that the concern are manufacturers of the Diamond Extension Stove Backs. We are advised by the Adams Company of Dubuque, Iowa, that they are the sole manufacturers in the United States of these Stove Backs. The Kramer Brothers are jobbers of these goods.

THE IDEAL FOUNDRY COMPANY of Girard, Ohio, is the name of a new company with a capital of \$35,000, formed by the consolidation of the International Range & Mfg. Company and the Ideal Foundry Company of Girard.

GEORGE W. McFADDEN, 186 Minot avenue, Auburn, Maine, who bought at auction the plant and stock of the Auburn Stove Foundry Company, is making repairs of all kinds for the Auburn Stoves, and is prepared to furnish them to those in need of such repairs.

In their advertisement, on another page the Ringen Stove Company of St. Louis, Mo., call attention to their well-known line of Quick Meal Gasoline and Oil Stoves for the season of 1902. The makers claim the Quick Meal will be better than ever, many new improvements having been introduced. The high standard of material and construction which has always characterized this line will be strictly maintained. It is interesting to note the statement that the sale of Quick Meal Steel Ranges has doubled during the past season. Dealers are urged to apply early for exclusive agencies.

THE READING STOVE WORKS, Orr, Painter & Co.,

Reading, Pa., have favored us with one of their handsome leatherette standing desk calendars, which they are distributing to the trade. These calendars are arranged to be used for the years 1901 to 1907, and are tastefully ornamented in gilt, with the name of the firm, their various branch offices, &c., in gilt letters. The days of the week, the months and years are turned by means of brass thumb screws, and the name of each day is surmounted with photographic reductions of some of the various lines of Stoves, Heaters and Ranges manufactured by the concern. Monday illustrates the Mystic Sunshine Range, Tuesday the Othello Range, Wednesday the Colonial Sunshine Range, Thursday the Sunshine Oak, Friday the Golden Sunshine Heater, and Saturday the Tropic Sunshine Furnace.

THE ILLINOIS STOVE COMPANY of St. Joseph, Mich., have been incorporated with a capital stock of \$5000 under Illinois laws.

AMERICAN STOVE BOARD COMPANY, Chicago, have prepared plans and specifications for a large factory building to be erected on property adjoining the present site of the company's works. The new building will be nearly double the size of any of the present structures, and will enable the company to greatly facilitate their work, as well as to give employment to several hundred additional workmen.

WE are informed that the S. Obermayer Company, Cincinnati, Ohio, have opened a warehouse in Pittsburgh, corner of Thirty-fifth and Charlotte streets. The company will carry a full line of Foundry Facings, Supplies and Equipments there, and will be in a position to fill all orders promptly. This branch will be known as the Pittsburgh branch of this company.

THE CHARTER OAK STOVE & RANGE COMPANY, St. Louis, Mo., say the difficulties which they have experienced on account of the delay in obtaining and scarcity of material have now been overcome. They report the demand for their products unusually heavy, and although they have increased their facilities, enabling them to turn out more than 600 Stoves per week more than in corresponding period of last year, they are still hard pressed to promptly meet all requirements.

W. H. COLEBROOK, SONS & Co., Syracuse, N. Y., are attracting attention to their Black Flag Stove Polish Benzine Paste for the use of Stove dealers by the distribution of a circular presenting the portrait of an honest man, who stands for this Polish and Colebrook's Asbestos Furnace Cement and Stove Putty, on the ground that they are the best and that there is nothing "just as good."

A LITTLE FOLDER which is being distributed by the Michigan Stove Company sets forth the merits of the Front Glow Oak Garland Parlor Heater, designed for using soft or hard coal, coke or wood as a fuel. The construction is referred to as being original and as giving two large front and full base heating flues to an Oak Stove. The fire pot is heavy and can be furnished either single or double, as required. The body of the stove is of cold rolled boiler iron. The front door has mica illumination, and the Stove is fitted with heavy shaking coal grate, or patent cut off grate for wood.

WE are advised by the Peerless Steel Range Works of Chicago, Ill., that the statement published in our issue of last week to the effect that they have decided to move their plant to South Milwaukee, Wis., is incorrect. Although they received a very flattering proposition to locate in South Milwaukee, no negotiations are at present in progress, and the company intimate that they are not likely to make a change at any time in the near future.

THE BRONSON-WALTON COMPANY, Cleveland, Ohio, makers of Coffee Mills, Roasting Pans and Hardware Specialties, have moved into their new plant, which has been building during the summer. They have added new machinery which will double their capacity. They report plenty of orders and are running a night force. One hundred men are employed.

PERSONALITY AND HUMAN NATURE AS ELEMENTS OF COMMERCIAL SUCCESS.

BY F. E. BONNEY.

"There is a great deal of human nature in man," says Judge Haliburton, and he followed the statement with the further one that, "there's more in woman." "Nature draws more than ten oxen," says another of the old philosophers. Horace says, "Though you cast Nature out with a pitchfork, it will still return." "What's born of a hen will scrape." The Spaniards have a proverb that, "The son of an ass brays twice a day."

BUSINESS FAILURES OR SUCCESSES.

In seeking for the causes of business failures or successes it has often appeared to me that both writers and speakers have frequently failed to take cognizance of elements which contribute not a little to success or failure, or, if they have recognized such elements, have failed to give them the importance which they really deserve.

This may be because such elements do not appear prominently upon the surface, but rather beneath it, or, when they do rise above, are not always recognized by their proper titles. I refer to personality and pure human nature.

These elements have guided or misguided the affairs of men from the time when Eve's overweening curiosity made her a prey to the serpent and Adam fell a victim to feminine cajolery, to the present twentieth century, where human nature is the same, though clothed in the garb of more modern times. The cat, though transformed to a bride, will still pounce upon the mouse, as in the days of Æsop.

TENDENCIES AND PECULIARITIES.

We come into the world human and endowed with a nature that has accompanied the race through all the ages. We each and all of us may have our especial and particular mental peculiarities or tendencies, but others have had them before us and others will have them after us. They are mostly natural and subject to well known and fixed laws.

In general we are much alike and many tendencies we all have in common. Still each individual has a few little peculiarities very much his own, and these we soon come, to some extent, to recognize in each other. We may not all agree as to the importance these tendencies and the knowledge of them in each other play in the game of business, but all will, I believe, agree that they cut somewhat of a figure.

IT IS HUMAN NATURE

to locate the causes of success largely within ourselves and to place the blame of failure upon outside causes and influences. One man succeeds because he has a disposition and mental make up which makes him friends and draws him trade from all directions. Another who lacks the personality of the first succeeds because he understands human nature in others and knows how to play upon and guide into proper channels their various peculiarities and inclinations.

One man fails because his personality is bad, though his methods may be good. Another fails, though his personality is good, because he does not understand and appreciate the many peculiarities and tendencies of his fellows. Many succeed and many fail without ever fully realizing or appreciating the real forces which lie at the bottom of their success or failure. The man who is thoroughly conversant with Nature's laws and who knows the causes of certain effects and how to produce, regulate or take advantage of them, has a strong lever with which to do his work.

SELF PRESERVATION

is the first law of nature. It is born with us. It is intuitive. It doesn't wait for reason, judgment or fairness. This is shown in times of great danger by the selfishness and brutality of many from whom we would least expect such an exhibition.

We may say we would not exhibit such a spirit. Wait till we are tried. Next to me is mine. Next to us is ours. This is natural. Now for the application. A man starts in business with ample capital, a good location and all

the outward needs for a successful career. He has a bad personality. Customers do not like him. They may think he means well, but they don't like to trade with him. He fails. Why? Will he be honest as to the cause of his failure, even should he know it? If the department store man across the street was a pleasant fellow, will he not lay it to him and his competition?

Another starts out likewise well equipped as to capital, location, &c. He has a pleasant and attractive personality. He is a good fellow. He cannot say "No" to the salesman who asks him to take a gross, instead of a dozen. He can't say the little word to the other good fellow, who wants the goods to-day and will pay next month, next fall and perhaps finally in pork. He fails. Why? Will he be honest? If the catalogue house man in the city bought carefully and sold for cash, will he not lay his failure to catalogue house competition?

SELFISHNESS.

There is nothing more human or more natural than selfishness. This is seen nowhere more forcibly than in trade. Your customer as a rule does not go to the department store or send to the catalogue house because he dislikes you, but because he believes he can do better for himself and his. If the catalogue house or department store man gets his trade, it is because they have made him believe this. They recognize this trait of human character and cater to it. Wouldn't you do the same if you had the capital and the opportunity? Now be honest.

Do you try to take advantage of this human selfishness, and try to show your customer how he is doing best for himself and his by trading with you, even if he has to pay a slightly higher price? Do you show him how some of the money he pays you stays at home to keep up the local church, school, fire company, &c., and do it pleasantly, effectively and persistently? Or do you jump upon him and the catalogue house rough shod and often miss the truth and too sharply attack the customer's judgment, which is a very tender point with him?

How many customers, if too roughly convinced of an error, will refuse to correct the same, simply as a matter of personal pride, or through a dislike to openly come out and admit their judgment was wrong.

PROSPERITY DESPITE COMPETITION.

There are hundreds of merchants to-day in cities and villages who are successful and prosperous, notwithstanding much severe competition. They are selling large quantities of goods, getting fair prices and making nice profits and accumulating a competence. In these same cities and villages are other merchants who are not thriving, though they have practically the same conditions to meet.

I do not wish to appear to argue that personality is everything or that an acute knowledge of human nature will always accomplish desirable results. I do, however, believe that these elements are important factors in business success. Barnum said that people liked to be humbugged. They evidently liked Mr. Barnum's way of humbugging. He was careful, however, that his humbugs had no stings. How many men have made fortunes from a knowledge of pure human curiosity? How many men have traded to their profit on human credulity and hope?

A knowledge that men can be easily made to believe what they really want to believe has enabled many a man to enlarge his bank account. In our fights against many evils we have, I fear, many times lost sight of some of our most effective weapons.

We sometimes abuse the catalogue house and department store man. He is doing simply what you or I would do were we in his place, provided, of course, that he is at least fairly honest, and most of them doubtless are. He is buying where he can do the best, selling for cash and making some money. He understands human nature. This knowledge is a part of his stock in trade and it is yielding him good returns. As long as he is honest we should not criticise him. If he is dishonest and unfair he should be punished, and in any case his sins will ultimately find him out.

The man who sells the department store and the cat-

atalogue house at cut prices and allows them to cut prices to the consuming public to a point where the honest retailer cannot compete is the man we are after. His own selfishness has blinded his vision and overshadowed his judgment of the rights and nature of others.

THE MANUFACTURER AND THE JOBBER

are the men we must educate, but we must not attempt it with a club. The tendency of several generations cannot be dissipated in a year. These men know something of the laws of equilibrium and can be taught that the selfishness of a few hundred men cannot stand against the selfishness of several thousand. They are interested in themselves and theirs and will follow the paths which lead to the best results. A few might be driven into these paths. All can be led. There is also a widespread love of absolute and exact justice among men, and the majority will always recognize this principle. Those who will not quickly recognize self interest.

GIVE THE RETAILER AN EQUAL CHANCE.

Justice demands that thousands of retailers scattered throughout the land in close touch with the consuming public shall have an equal chance with the department store and catalogue house to make an honest living. There should be equality before commercial as well as before constitutional law. If an appeal to justice fails then let there come an appeal to selfishness. The manufacturer and the jobber are in the market to sell goods at a profit. Who buys the most and pays the best prices, the thousands of retailers, or the hundreds of department stores and catalogue houses?

A CONTINUED AND PERSISTENT APPEAL

to justice and selfishness will settle these questions.

In pursuing these methods nature and personality should not be lost sight of. Study your men. Use tact and ever keep in mind the influences which govern and shape human conduct. Be fair, be calm, be persistent and, above all, be just.

We all have our troubles. We always have had them. We always shall have them. The mills of God grind slowly, but the product that comes from the outlet is always the pure and refined grain, free from chaff and cheat.

Study your mental philosophy, master your moral philosophy and apply the knowledge gained from both to your every day business and social relations, and if you don't achieve at least fair success then the lessons which are intended to be conveyed in this article are all wrong.

Stove and Hardware Dealers.

THE CLARK HARDWARE COMPANY, Black Hawk, Col., have been incorporated with a capital stock of \$25,000 to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Mine and Mill Supplies.

ALUMINUM MFG. COMPANY, Two Rivers, Wis., are distributing a circular illustrating their line of Aluminum Goods, including Oil Cans, House Numbers, Key Chains, Match Safes and Holders, &c. They have recently commenced the manufacture of Aluminum Playing Cards.

THE AVERY STAMPING COMPANY, Cleveland, Ohio, have added a smaller sized Steel Spider to their line of Never-Break Cooking Utensils. It is designated as their No. 6 Breakfast Spider. The cooking surface of this size is 7 inches in diameter. It is referred to as very handy for cooking small quantities of ham and eggs, &c. The company state that they have encountered a demand for a Spider of this size, which is especially adapted for use in families where there is only a small meal to be cooked, and they are expecting to have a large sale of it.

THE CARNAHAN ENAMELING & STAMPING COMPANY of Canton, Ohio, have broken ground for their new factory in that city. The company's plant will be on a large scale, and they will draw their raw material from local works.

D. R. BALL & SON have embarked in the Hardware, Stove and Tinware business at Juniata, Neb.

Graphite.*

The use of graphite in the world's industries is rapidly increasing, not only in the amount and value of material, but also in the number and variety of its applications. Beginning in the middle of the sixteenth century with its use in the manufacture of lead pencils, followed perhaps a century or more later by being used in the manufacture of melting pots, its sphere of usefulness has so broadened that to-day it occupies a distinct and very important place in the world's industrial scheme.

Before describing its various uses, it may be of interest to present somewhat briefly something concerning its names, natural formation, general occurrence, sources and amount of supply. The words "graphite," "plumbago" and "blacklead" are practically synonymous terms, in that they refer to the same chemical substance. The term "blacklead" was probably the original, and a comparative one, comparative because it indicated the color of the streak made by this substance as compared with that made by metallic lead, evidently in very early use for the purpose of writing or lining on paper. From the word "blacklead" the word "plumbago" naturally developed through the Latin. The word "graphite" is from the Greek; meaning in the original, "I write." Thus it will be seen that all these names have reference to its very earliest use—that of making pencils. While these three forms are synonymous, there have come to be certain peculiar applications in their uses—thus, we import plumbago from the island of Ceylon, and blacklead from Germany, Austria and Italy, and, at the same time, we export graphite from this country to all the other countries of the world. There are lead pencils, plumbago crucibles and graphite lubricants, blacklead stove polish, plumbago foundry facings and graphite paint. This confusion of names may seem to be somewhat misleading at times, but there is considerable method in it.

WHAT GRAPHITE IS.

Graphite may be regarded as occupying the middle place in the carbon triad—charcoal and the diamond being the other forms—but has its own individual characteristics, which make the number of its useful applications much greater than that of either of the others.

Graphite occurs naturally in two forms—the amorphous and the crystalline. The amorphous graphite does not occur pure, but is always associated with some other earthy materials, the character of which have great bearing on its use. Crystalline graphite also shows great variations, because of the distortion of its crystals during the process of formation. It occurs both massive and with its particles disseminated through a containing rock; thus Ceylon graphite occurs in large masses of crystals, while the American formation is usually found as a small laminated flake disseminated through granitic rocks.

WHERE FOUND.

At the present time the world's annual production of graphite probably approximates 60,000 tons, and of this amount probably 50 per cent. is of the crystalline variety and the balance of the amorphous form. Of the crystalline graphite, at least 90 per cent. comes from the island of Ceylon, and of the amorphous form, probably the same relative proportion comes from the interior States of Germany and Austria. The remainder is nearly all supplied from the mines of Canada, New York and Mexico.

The first importation of Ceylon graphite into this country was made in 1829, by Joseph Dixon of Salem, Mass. Two years previous to this he had experimented with graphite from the State of New Hampshire, as a substitute for German blacklead, or pot lead, as it was sometimes called, in the manufacture of crucibles. The success of his experiment in this line was so pronounced that he secured a small shipment of Ceylon plumbago, samples of which he had previously seen in the possession of sailors in the New England ports. This was the first use of crystalline graphite in the manufacture of

* Abstract of an article by Malcolm McNaughton in the *Stevens Indicator*.

crucibles, which particular branch of the graphite industry now absorbs probably somewhat more than one-half of the world's output.

ITS USES.

The total output of graphite is consumed in something like the proportions indicated in the following table:

Crucibles	55
Stove polish.....	15
Foundry facings.....	10
Paint	5
Lubricating	5
All others.....	10

The various uses to which graphite is put depend on certain physical characteristics which it possesses, none of its uses, except as a foundry facing, involving any chemical reaction. These physical properties are its infusibility at temperatures below that of the electric arc, its great capacity for absorbing and transferring heat, the comparative high electrical conductivity and its unctuous softness. The latter expression sounds rather peculiar, but is meant to describe that quality of yielding by contact with other surfaces, and which is the reason for its use in lead pencils, lubrication, powder glazing, stove polishes, &c. It adheres readily to any surface with which it comes in contact, and is highly polished by the slightest friction.

LEAD PENCILS.

The use of graphite in the manufacture of lead pencils is the oldest, and is now its most common one.

The lead used in the manufacture of lead pencils is of the amorphous form, and is supplied principally from the mines of Austria and Mexico; the latter product having only recently come into the market for this purpose, but seems to be rapidly taking the place of that from other sources. The pencil making industry, although not using very great quantities of blacklead, is a very considerable one; probably 15,000 people being employed in the industry in this country, Germany and Austria.

FOUNDRY FACINGS.

The practice of facing molds in which castings are to be made with some carbonaceous material is general. The material used is usually anthracite, charcoal, or graphite. The reason for its use is for the purpose of preventing the adhesion of the iron to the sand of which the mold is made. The principle of its use for this purpose is as follows: The air contained in the mold, and which is carried in by the stream of molten metal, furnishes oxygen for the combustion of the carbon material of which the facing is composed, so that a condition obtains analogous to that of the spheroidal condition of a drop of water on a hot surface; thus the iron is effectually prevented from coming in actual contact with the sand, so that when the casting is removed it will be found to be covered with a thin crust which will easily peel off, leaving the iron smooth and clean. In order to secure perfect results certain conditions must prevail.

1. The facing must adhere perfectly to the mold surfaces. The hot metal coming in contact with the sand dries it out, and if the facing has not been properly compounded it will be washed away in front of the advancing metal, so it is necessary to have a certain percentage of clayey material mixed with the facing to prevent its running before the metal.

2. It must be slowly combustible. If the facing burns quickly trouble is likely to ensue from two causes:

- a. Too great volume of gas to be readily vented, this causing "blows" and "cold shuts;" the latter term being applied to those cases where the iron has not filled the mold.

- b. Where combustion is too rapid it is not likely to endure during the entire time that the metal is in the fluid condition, so that while at first the spheroidal condition exists it ceases before the metal has solidified—thus giving every opportunity for adhesion.

Castings which have been made in connection with the use of a facing well suited to the particular case are superior because of a finer surface texture, of ease of cleaning and less tendency to dull the cutting edges of

machine tools. Plumbago is the one material which combines in a greater degree than any of the others the requisites that are necessary to a good facing. It contains no volatile matter, and it burns evenly and slowly, so that a less quantity may be used. It has, in addition, another quality, that of ability to being sleeked or polished, giving the smoothest possible surface to the mold.

AS A LUBRICANT.

One of the most interesting features of graphite is its use as a lubricant. This use is a comparatively new one. The crystalline graphite is the only form suitable for lubricating purposes, because the amorphous form is always associated with impurities. While any pure, soft, crystalline graphite is valuable for lubricating purposes the laminated form is especially adapted to this use.

Another and exceedingly important use to which graphite is applied is in the process of electrotyping, where it is used on the face of the wax case to prevent adhesion of the type form. It also supplies a conductive coating the surface of the mold. Considerable quantities of crystalline graphite are also used for the purpose of glazing gunpowder, in order to prevent absorption of moisture and consequent caking.

STOVE POLISH.

Stove polish is one of the common articles in which graphite is used in large quantities. All varieties are used for this purpose, the amorphous blacklead from Germany in the largest quantities. The polish consists of two components, the graphite which imparts the polish and the clay binding material which holds it in place. The German blacklead can be used without any admixture, but the addition of crystalline graphite gives a more brilliant but grayer luster, far more enduring and obtained with much less labor.

GRAPHITE PAINT.

During the past decade the use of carbon as a paint pigment has steadily increased, and the form of carbon now most usually employed for this purpose is graphite. Every one is familiar with the great durability of paint made from lampblack and linseed oil, and also with the very great disadvantage in its use, that of extremely slow drying. Paints made with graphite as a pigment seem to have all the durability of the lampblack paint, with the advantage of drying in a reasonable time without the addition of dryers. As a paint pigment graphite is absolutely inert, producing no injurious effect whatever on the oil, and not subject to any change as the result of any exterior conditions. One of the peculiarities of graphite paint is the extreme ease with which it may be worked out under the brush. This is due to the same quality which makes it a good lubricant. The workman finds himself spreading it out properly in spite of himself—it being actually easier to spread it out than to apply heavy coats.

OTHER USES.

Crystalline graphite is used for polishing the bottoms of racing craft, and has been brought into requisition in preparing large steamers for their speed trials. It is also used in the form of wire, rods, plates and pieces of various shape for electrical purposes on account of having very great range of electrical resistance.

The last use of graphite to be mentioned is that of a substitute for red lead for use on threaded joints, gas-kets, &c. Its advantages for this particular purpose are that the mixture never sets hard as red lead does, and joints may be readily opened, even years after they have been put together. And also, owing to the lubricating quality of the graphite, pipes may be screwed up at least a half a turn more on the average.

In a letter to *The Iron Age* John M. Hartman of Philadelphia says that the oldest casting machine known to him is at the lead works of John T. Lewis & Son in that city. It has an endless hinged table of molds, each mold lipping over the next one, and has a hammer on each side of the machine to knock the casting out of the mold. This machine has been in use for fully 50 years.

The Cleveland and Chicago Resolutions.

Special Meeting of the National Committee Confederated Supply Associations.

Owing to the somewhat radical steps taken by the Executive Committee of the National Association of Master Plumbers at their meeting at Cleveland, Ohio, in abrogating the arbitration and conciliation features of the New York Conference Resolutions and adopting the Cleveland Resolutions, printed a short time since in *The Metal Worker*, without any provision for arbitration, a method of settling differences that is growing in popularity, the whole plumbing trade will be interested in the attitude of the National Committee of the Confederated Supply Associations, as manifested in their action this week at Chicago.

The meeting of the National Committee of the Confederated Supply Association held in the Auditorium Hotel, Chicago, on November 12 and 13, was a special one, and of recognized importance. A full representation of the committee was present either in person or by proxy. This meeting was called for the purpose of considering the Cleveland Resolutions adopted by the Executive Committee of the National Association of Master Plumbers at a meeting held in Cleveland, Ohio, on October 8, 1901. These resolutions the National Committee of the Confederated Supply Associations do not recognize, and under date of November 12 the following resolutions, known as the Chicago Trade Resolutions, were adopted:

"Whereas, The National Committee of the Confederated Supply Associations has received official reaffirmation from the Executive Committee of the National Association of Master Plumbers that they insist upon the abrogation of the New York Conference Resolutions. Therefore, be it

"Resolved, That still believing in the spirit of conciliation and arbitration, we adopt the following trade resolutions:

CHICAGO TRADE RESOLUTIONS.

"Section 1. Manufacturers and jobbers shall hereafter sell plumbing goods to such jobbers as are officially recognized and to all legitimate master plumbers as hereinafter defined, and to such other parties as are included in list of exceptions hereinafter enumerated.

"Sec. 2. Definition of a legitimate master plumber.

"A party who represents the industry of plumbing, who has an established place of business, doing a general merchant and contracting plumbing business with the public generally, who has qualified under the State and local enactments regulating plumbing and plumbers, where such exist; or, where no license is required, who fulfills the other requirements and represents the industry of plumbing in the locality.

"Sec. 3. The following are entitled to buy plumbing goods: Federal Government, State and county institutions. Also water works, railroads, steamship companies, shipbuilding companies, car building companies, packing and stock yard companies, educational and charitable institutions, municipalities, manufacturing companies, for use only in the requirements of their business, providing they are regularly employing journey-men plumbers the year round to install same.

"No plumbing material shall be sold to any of the aforementioned parties for the use of any officers or private individuals connected with said excepted parties.

"Sec. 4. Plumbing goods may be sold to all manufacturers who use such goods as a part of their finished product, and when so sold by them.

"Sec. 5. No plumbing material shall be sold to department stores, mail order or catalogue houses, buildings, office buildings, hotels or retailers not doing a legitimate plumbing business

"Sec. 6. No material shall be furnished to any building that is in default to any plumber or supply house.

"Sec. 7. The National Committee of the Confederated Supply Associations is the recognized representative body or authority for and in behalf of the affiliated supply and manufacturers' associations, and to such committee all trade questions shall be referred; and it shall be the duty of said committee to hear and adjust the same promptly and to confer and advise with the Executive Committee of the National Association of Master Plumbers, and to use all proper means to preserve harmonious relations with them."

The following letter was also addressed to E. D. Hornbrook, president of the National Association of Master Plumbers, by C. W. Woodward, secretary of the National Committee of the Confederated Supply Associations:

"Replying to your letter of October 14, it is with deep regret that we learn of the fixed determination of the committee of the National Association of Master Plumbers to abrogate the New York Conference Resolutions, for we believe that these resolutions represented the careful thought and best sense of both parties thereto, and in most particulars were satisfactory as a working proposition.

"We further desire to place upon record our firm conviction that the action of the said committee has been hasty and unwise.

"We also desire to repudiate all statements and insinuations intended to convey the impression that the cause of the severance of the agreement heretofore existing has been the fault of the manufacturers and dealers, but call attention to the fact that the responsibility for the failure to enforce the New York Conference Resolutions in the Clow case rests as fully upon the Executive Committee of the Master Plumbers' Association as upon us.

"We desire further to say that we are firm believers in trade protection, arbitration of all trade difficulties, and in co-operation between the dealers and the plumbers, and hold ourselves ready at any time to confer in regard to these subjects."

The P. and S. S. League.

The team of F. Adey & Co. appeared at the alleys in the Plumbing and Steam Supply League bowling tournament in New York on Monday night with but three men, owing to sickness of the other two members of their team, and in consequence lost two games, leaving the contest between the teams of the John Simmons Company and the Dimock & Fink Company. The former won two games during the evening and the latter broke even, the feature of the evening being W. A. Presby's score of 196.

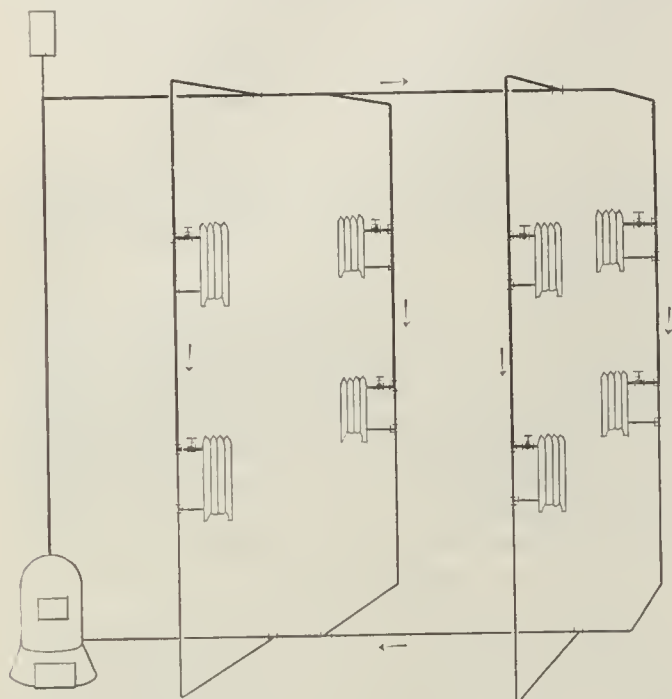
On Thursday night the team of the Ronalds-Johnson Company, New York, were made happy by winning two games. The C. S. Locke & Smith team won and lost, while the Thomas G. Knight team lost both games, one with a score of 671 against 673, the score of the Ronalds-Johnson Company team. C. A. Blanchard of the C. S. Locke & Smith team made 183 and repeated in 193. W. S. Gibbs made 189, and enabled the Ronalds-Johnson Company team to win their second victory. The contests are spirited, and the interest of the trade in them seems to be only awakening.

The call has been issued for the semiannual meeting of the Master Steam and Hot Water Fitters' Association of the State of New York, to be held in Syracuse on Tuesday, December 10. The meeting will be called to order at the Yates Hotel, at two o'clock in the afternoon, and the Executive Committee will hold a session at ten o'clock in the morning of the same day at the hotel, for the purpose of considering matters which have been brought before it, and anything that may be presented by the members which may require attention before the convention opens. The call not only invites the attendance of members of the association, but of all who are engaged in the heating contracting business.

Piping for Hot Water Heating.

BY A. B. C.

Those who are called upon to take up hot water heating as a branch of their business are often mystified over the one-pipe, two-pipe circuit and overhead systems; but when they are once explained and fully understood, either of these systems can be promptly selected



Piping for Hot Water Heating.—Fig. 1.—The Overhead System.

as best adapted to the conditions to be met in a building. Under proper conditions either the one or two pipe system of hot water heating will work satisfactorily. It is more a question of determining which of the systems is the best adapted for the building to be heated than upon the merits of any particular system in general.

In a building which will permit it, I would prefer the overhead system, shown in Fig. 1, where the main flow pipe is carried to the attic, and the main there carried

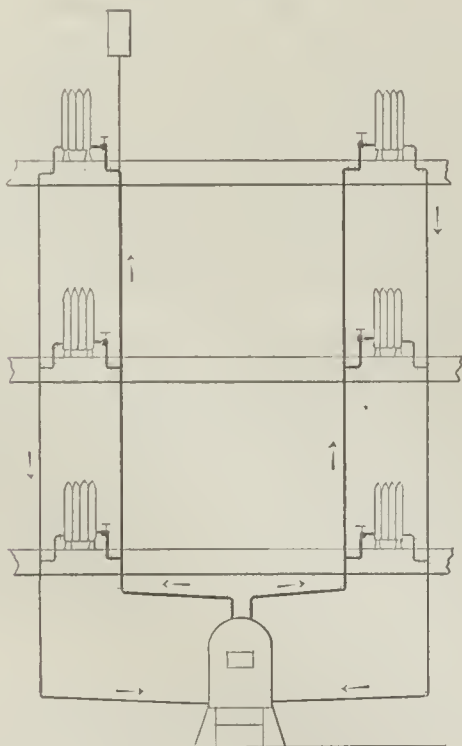


Fig. 2.—Modified Two-Pipe System.

along, pitching down and reducing in size as each branch is taken off it. The drop mains are of one size to the cellar, where they join into the return main to the boiler. The expansion tank is connected to the highest point of the main flow pipe and through this tank all the air in the system is expelled. The radiators are connected with one valve top and bottom to the drop mains.

In another case, where the building is small and the heater centrally located, I would run each flow riser separately from the boiler and carry a corresponding return main back, as shown in Fig. 2.

The usual two-pipe system is shown in Fig. 3. In this system the flow main and risers reduce in size as connections are taken off from them, while the return pipes correspondingly increase in size. Where large radiator connections are taken off a riser it is well to take them out of the straight run of the pipe and to continue the riser from the side.

In the case of a large hall or church, where the radiators are located mostly around the side of the building and the cost of the main is of considerable importance, the single main or circuit system shown in Fig. 4 is very suitable. The main is carried up near the cellar ceiling and thence around the cellar, pitching down, and finally back to the boiler. The flow connections for radiators

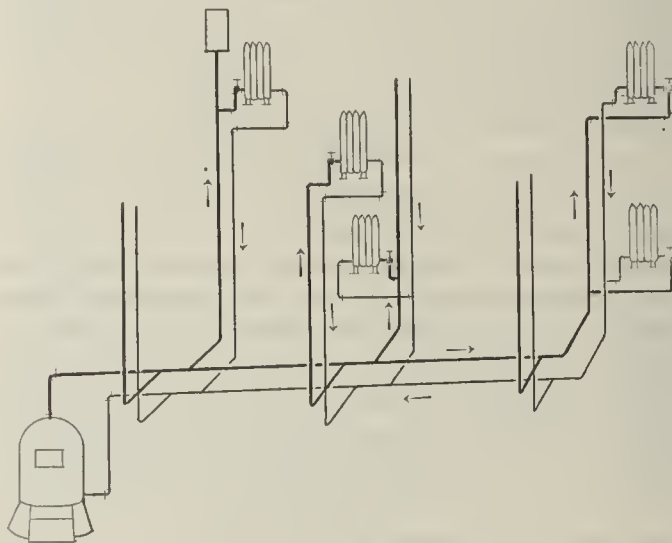


Fig. 3.—Two-Pipe System.

are taken from the top side of the main, while the returns are brought back into it on the side. Special fittings made for this purpose may be used.

In installing a hot water heating apparatus the pipes should always be properly graded so that there will be no traps or pockets for air to lodge in. The returns should never flow or butt against each other, and all pipes should be so proportioned that, as far as possible, the velocity of the flow may be the same in all parts of the apparatus.

The expansion tank may be connected to any of the risers, or, better still, a separate line may be run from

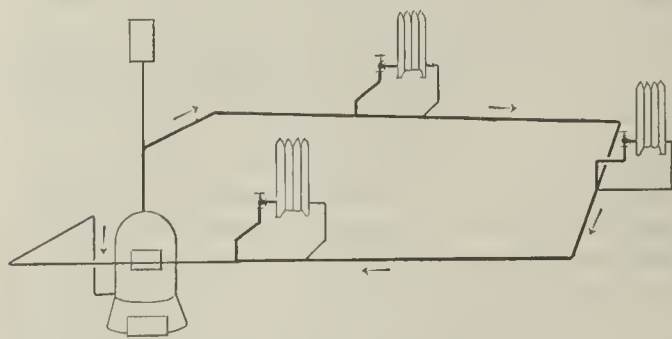


Fig. 4.—Single Main, or Circuit System.

the boiler without a valve on it. Or, if the tank is located in a cold place, both flow and return connections may be made to it. If there is a supply tank in the building or city water supply, use an expansion tank with ball cock. If there is a valve anywhere between the boiler and expansion tank, a safety valve should be used. I would also recommend an altitude gauge, or at least a try cock on the boiler, so that a person may satisfy himself that there is water in the apparatus before starting the fire. There should also be some kind of an automatic damper regulator for preventing damage from overheating; the most dangerous feature of hot water heating. I do not approve a closed expansion

tank. All indirect radiators should have valves which do not shut off the circulation entirely; otherwise, if neglected, these radiators are liable to freeze up.

There are well established rules and tables regarding sizes of pipes and radiators to be used, which any of the manufacturers of these lines of goods will be glad to furnish, and which it would be good practice to follow. Still, in determining the size of the radiators it would be well to remember that while the amount of heat given off by a certain radiator is easily determined, it is entirely different in determining the heat required to warm a certain room. While a great deal of expert figuring has been done in this line and tables compiled from tests have been published, which are useful guides, still the fact remains that after all has been considered it is in a great many cases a matter of good judgment in applying them to practice. I am inclined to believe that a person who blindly follows some stated rule, both as regards method of piping and sizes of radiators, will more often fail than he who uses good judgment and more liberal methods.

It is much better to use radiators too large than too small in hot water heating, provided the proportion is uniform throughout, as the temperature of the apparatus can always be carried as low as is required. By carrying a low temperature the heat given off is more mild and less uncomfortable to any one near a radiator.

A hot water heating apparatus, properly installed, will be found to be very economical and satisfactory.

Air In Hot Water Systems.

We wish to call attention, says the *Ironmonger* of London, to two causes of failure in hot water apparatus which, if peculiar, are not uncommon. The first is the existence of some water in a pipe or pipes when the proper filling or refilling is commenced. A hot water apparatus should be quite empty prior to its being first charged, or when at any subsequent time it is recharged with water. Then, if the cold supply is properly connected, the filling will proceed perfectly, and all air be expelled, as the water rises in the pipes. If, on the other hand, water is lying in any part of the apparatus, and more water is introduced, air will probably be locked between the two volumes of water. If all the pipes of a hot water apparatus were vertical, or could be given a really good rise or fall, the air, if imprisoned between two volumes of water, would work out; but with flat runs of pipe the air will be locked in and will remain in a very persistent and troublesome way.

To illustrate this let it be supposed that an apparatus has a dipped length in a horizontal flow or return main, as a result of the building settling or some other unforeseen cause. On testing, however, a leak is found which makes it necessary to empty the apparatus. In doing this the dip would remain filled, or partially filled, with water. On refilling this water would offer resistance to the free escape of air, and air would be locked in the pipe, and it might be in sufficient volume either to impair the circulation or even to stop it. There is nothing visible to indicate the cause of the trouble, and the fitter is puzzled to know why a main or branch which worked well on first charging and testing should fail to work after the apparatus has been emptied, for some trifling purpose, and recharged. Briefly stated it is essential that on filling an apparatus the water must enter at the lowest point, and as it flows in and rises up the pipes all air must rise easily and freely before it. If there is a dip to pass a door, then put either a small cock to drain it when the remainder of the apparatus is emptied; or, what is more usual, put an air vent on that side of it where the rising water reaches first. If there is any doubt, put an air vent on both sides. There must not be the slightest check to the free expulsion of all air from the pipes as the water enters them.

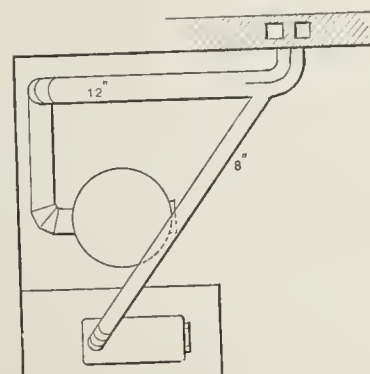
The second cause of failure is even simpler than the one just discussed. It is to omit to open all the air valves when charging. With many apparatus erected there is no trouble if the water is turned on and runs in with all air vents closed, for on subsequently opening them the imprisoned air comes away and water fills in everywhere.

On the other hand there are piping systems erected where this cannot be done, for the air cannot come away freely under these conditions. It should, therefore, be an invariable rule to have all air cocks open when charging. With a large apparatus this means having several hands to watch for the appearance of the water and immediately shut the cocks; but this involves but little time and expense, much less than would be entailed if a section became air locked.

HEATING HINDERED BY HELP.

BY LISTENER.

The chimney has come in for a great deal of discussion in the past, in connection with all kinds of heating and cooking apparatus, and as heating contractors



Heating Hindered by Help.—Fig. 1.—Plan Showing Chimney Connection.

become better informed, the important bearing which the chimney has on heating apparatus brings it still more attention in the discussions among the trade. It is probable that this will continue as long as men have to contend with chimneys and as long as the chimneys that have been constructed in old buildings exist without changes to meet modern requirements. It is perfectly natural that though the old buildings may continue in their old fashioned style, the occupants may have modern tastes and demand modern conveniences. This, in an instance that was recently brought to the attention of a boiler manufacturer, caused a complaint which he was expected to make good.

A boiler had been sold to supply a given amount of radiation, and one had been purchased which was rated

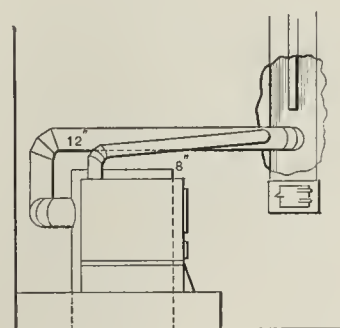


Fig. 2.—Elevation.

to have ample capacity to do the work with safety in the coldest weather, with still some reserve power. No complaint was heard from the apparatus until the cold period of February, when the complaint was made that the boiler did not keep the house warm. The heating contractor evidently had a generously disposed customer; and on the representation that such cold weather would tax the capacity of any boiler, he was induced to purchase another smaller boiler to be connected with the piping system, to help out the larger boiler in severe weather. After this boiler was set in position, instead of relief further trouble was experienced and led to a complaint being made to the manufacturers of the larger boiler, when the conditions were discovered as indicated by Fig. 1 in plan and Fig. 2 in elevation, which

show how the two boilers were connected with the chimney.

The first boiler was a large one and connected with the chimney by means of a 12-inch smoke pipe. When the smaller boiler was set in connection with it, an 8-inch pipe was connected by means of a Y into the side of this 12-inch pipe. The contractor evidently knew that this connection would be something of a handicap to the larger boiler and provided a vertical partition in the 12-inch pipe to separate to a certain extent the pipes from each other. Investigation proved that the chimney had two flues, and that at the point where the 12-inch pipe entered the chimney the partition had been broken away, so that the two flues were connected at the bottom. This could readily be seen by opening the clean-out door, which was placed a short distance below the pipe hole in the chimney.

Old chimney experts can readily understand what a handicap to the first boiler the pipe connection from the second boiler proved to be. It would have been far better to have left out the partition placed in the smoke pipe and to have increased the 12-inch pipe to a 14-inch pipe at the point where the 8-inch pipe was received. If it was not possible to have broken the partition between the two flues out of the chimney from the top to the bottom, it would have been far better to have connected one boiler with one flue and the other with the second flue. The first boiler set, it is claimed, would have had ample capacity for heating the building, had the chimney in the first place been of the proper size and construction; also that the money expended for the smaller boiler would have produced better results if it had been expended in getting the chimney into proper shape and size for the work that was required of it in operating the larger boiler efficiently.

The heating contractor often is severely handicapped when connecting furnaces or boilers with chimneys in old buildings. The owner will permit almost any kind of remodeling to be done in the cellar, but when he is asked to cut open the flues of the chimney from cellar to roof and to enlarge the size, he is very apt to turn his back on the maker of such a proposition in disgust and to listen favorably to some other contractor who is willing to attempt to heat the building without making such extensive changes on the different floors of the building as the construction of a proper chimney would necessitate.

Gast's Asbestos Air Cell Coverings.

F. J. Gast, 26 Cortlandt street, New York, is the manufacturer of Gast's asbestos air cell covering for hot air furnace pipes, furnaces, steam pipes, boilers, &c. One form of this material is put up in rolls of 250 square feet, it being 36 inches wide and $\frac{1}{2}$ inch thick. It consists of two thicknesses of sheet asbestos, one of which is plain or flat and the other corrugated, the two being cemented together to make a single sheet. When covering furnace pipes, for instance, it is wrapped around the pipe twice and fastened with iron or brass bands $\frac{3}{4}$ inch wide furnished for the purpose, or plain wire can be used. The same material is used on steam pipes. Another regular form of this material is made in sections 3 feet long by the manufacturer for 18 sizes of pipe, having a range of from $\frac{1}{2}$ to 12 inch diameters. He also furnishes molded fittings for elbows of various angles, tees, valves and crosses. It can likewise be made for pipes up to 24 inches diameter. Still another form is in the shape of blocks or boards for covering boilers, 6 inches wide and 36 inches long, or in boards 36 x 36 inches square. The thicknesses vary according to nature of the use for which it is intended.

DR. CHARLES J. SEARCH, 168 Putnam avenue, Brooklyn, N. Y., is the inventor of a Fire Pot for plumbers, using kerosene oil for a fuel. In its operation the heat of the burner vaporizes the oil so that it burns in the form of a gas, the flame of which gives off a very intense heat, which, it is claimed, can be easily regulated and is not easily affected by the wind.

HOT WATER OR STEAM.

In discussing the relative advantages of a steam or hot water heating plant a writer in the *Rays of Light* presents the following:

One of the points not credited to the water system is the fact that the hot water can be carried lower than the water line of a steam plant, which in many cases is a valuable point, as the boiler or heater can be located in one of the rooms to be warmed, thus saving all the heat that the fuel produces. The question is sometimes asked "Which is the better for heating apparatus, steam or hot water?" This question cannot be answered positively or in a word.

First, the matter of expenditure. The first cost of steam heating apparatus is somewhat less than that of hot water, owing to the fact that for hot water circulation larger pipes are required, especially for the returns; and also a larger amount of radiating surface is commonly, though not necessarily, used to compensate for the lower temperature at which hot water apparatus is usually operated. If the matter of first cost then is the most important factor, the decision must be in favor of steam.

On the other hand, the cost of fuel is an important consideration. This is in favor of hot water apparatus, especially where low temperatures are used. There are two reasons for this economy of fuel, the first being that in the fire box of a hot water boiler the products of combustion are in contact with the fire surface, which is at a temperature considerably lower than is the case when in contact with a similar surface of a steam boiler, say from 20 to 50 degrees less; from which it results that the products of combustion part with proportionally just so much more heat to the boiler, and are discharged into the chimney at a much lower temperature, with a corresponding less waste of heat. The second reason is that in consequence of the high specific heat of water, heat from the fire not immediately wanted can be stored up in the apparatus to be given out later as required, instead of being wasted in the chimney.

As to the danger of freezing, preference is to be given to a steam apparatus. It is undeniably true that if a hot water apparatus is neglected so that the fire is extinguished and any part of the apparatus is allowed to fall below 32 degrees F., such part of the system will be frozen and probably destroyed; and a similar result will happen if any radiator of such apparatus is entirely shut off and then exposed to extreme cold. This point militates against the use of a hot water apparatus in office buildings where part of the offices may be unoccupied, and so also in country houses, where indirect radiators which are thoughtlessly closed may be exposed all night to extremely cold weather; a hot water apparatus must be used with caution, while the steam system under similar conditions is less liable to freeze and break radiators.

If hot water be adopted it should not be forgotten that there is a justly raised objection to its use from the slow way in which radiators cool when shut off. The radiator is usually shut off when a room is too warm, and this is naturally just the time when it is desired to cool it quickest. Owing, however, to the high specific heat of water it takes an hour or two for it to drop to the temperature of the room, and heat thus retained gives annoyance or is wasted. If steam is used the radiators cool more quickly, for the steam in them is rapidly condensed and the only heat they hold is that of the iron, of which the specific heat is low compared with water; and all the radiating surface when shut off, therefore, ceases giving heat much more rapidly.

Hot water requires less skill and care in operation, as it dispenses with the gauge, gauge cocks, &c., and there is no water line in the boiler to be maintained or over pressure to be guarded against. In fact, the manipulation of a hot water boiler is almost exactly like that of a furnace. That is, if one wants more heat the fire is quickened, or if less heat is needed the draft is closed and the force of the fire checked. A hot water apparatus is usually left to the care of the ordinary house servant without apprehension of inconvenience or

danger. It should be said, however, that a steam apparatus is just as easily controlled after the person in charge has been instructed and cautioned.

BOILERS, RADIATORS AND VALVES.

The lull of the season with the steam fitters having been reached, it is a pleasure to note that the relations between the manufacturers and contractors during the year have been exceptionally satisfactory. Meetings of the manufacturers of heating boilers have been frequent and, notwithstanding the pressure that has been brought to bear at various times to effect an advance, prices have been maintained at one level throughout the year. This has been gratifying to the contractors who bid on work or architects' plans in the spring and had no difficulty in securing the goods to complete these contracts at the price on which their estimates were made. The confidence inspired among the manufacturers by their frequent meetings has enabled those who in the past have hesitated about piling up a large stock of boilers to run full during the dull season, and has led to a larger stock of goods being available this fall than has heretofore been the case. The result has been less difficulty in securing boilers by the contractors, and little inconvenience has been experienced through the scarcity of goods.

From such information as can be secured it would seem that the number of boilers sold this year is considerably in excess of that sold in any preceding year, which should mean that the manufacturer and steam fitter alike have benefited. A desire on the part of the manufacturers that the friendly relations of this year shall continue is evident from the fact that they are already on the alert to secure pig iron and material for next year at prices that will enable them to avoid any change in the present prices. At recent meetings a strong disposition to advance the price of boilers has been in evidence. Within the past month there has been an advance in pig iron, and there is no evidence that labor or any material which enters into the manufacture of boilers is likely to recede in price. With these facts in view the manufacturers have a problem to solve before they reach a decision as to whether or not the present prices shall hold or a change be made for the business of another year.

The steam fitter has had more trouble to secure radiation than to secure boilers, and it has been necessary in many instances to change from one style of radiation to another and to persuade customers to permit the change to be made. The rush of the season, however, has now been passed, and while shipments are still somewhat delayed any of the many styles of radiation can be secured with about the same degree of promptness. Apparently steam fitters have been more annoyed in securing the brass goods and valves needed on a heating plant than with any other of the materials needed. The manufacturers of the better class of goods have enjoyed an increased trade, and as a result steam fitters have constructed better work for their customers in many instances than they otherwise would.

The worry over the scarcity of small sizes of wrought iron pipe soon passed away when it became known that all the pipe needed was in stock, but that the jobbers had control of the available supply and had stiffened the price on account of the strike. At the present time the heating contractor can be reasonably sure of securing boilers, radiators, valves, pipe and fittings required for a heating system without experiencing any serious delay and at prices which are generally considered satisfactory.

The new plant of the Eastern Tube Company, at Zanesville, Ohio, is in partial operation, turning out 2 to 8 inch Tubes. It is expected that the entire establishment will be in full operation about February 1, when the company will be prepared to fill orders for Tubing from 1/2 to 16 inches in diameter. The officers of the company are: T. E. Beall, president; E. C. Card, treasurer; Joseph H. Beall, secretary, and C. A. Corbett, general manager. The main offices of the company are in the Bank of Savings Building, Pittsburgh.

New Quarters of the Frank C. McLain Company.

At the beginning of this week the Frank C. McLain Company transferred their offices and salesroom to their warehouse, on the corner of Thirty-eighth street and Eleventh avenue, New York. The main building is 60 x 110 feet. The shipping office is on the first floor, which is divided through the center so that on one side provision is made for the storage and handling of cast iron fittings. On the other side is a pipe shop, which is equipped with machines for cutting pipe of all sizes up to 8 inches, according to the sketch sent in by the customer. The front portion of the second floor will be used for the offices of the company and for displaying samples of their line of boilers, radiators and steam fitters' supplies. In the rear complete arrangements have been made for carrying a full line of malleable iron fittings. Another section is fitted for valves and brass work for steam fitters, while the further space on this floor will be devoted to the storage of hot water storage tanks and expansion tanks for hot water heating systems. The upper floors will be used for the storage of steam and hot water boiler sections and steam appliances.

The basement has one side equipped with special machines for assembling radiators of special sizes. This department has a capacity for storing 40,000 feet of radiation. The other side of the basement contains a steam boiler and engine, also a gas engine, either of which can be used for operating the pipe cutting and threading machines and the elevators. The balance of the cellar is devoted to the storage of the sections for the larger sizes of steam and hot water heating boilers. The building has ample floor space for carrying, in addition to the goods mentioned, a variety of pump governors, steam traps, pressure regulators, and the infinite variety of special appliances used in the modern heating plant which the company intend to carry in stock. Their facilities for handling orders promptly are increased by having in the rear of the warehouse a platform connected with a railroad switch and large enough to accommodate four cars. A special inclined trolley is provided for transferring goods from the cars to the building. Adjoining the railroad tracks, on one side, is a pipe storage shed, which is the full length of the platform, so that two cars may be unloaded in the shed at one time. Here it is intended to carry a large stock of black and galvanized iron pipe.

Pittsburgh Valve, Foundry & Construction Company.

The large new foundry being built by the Pittsburgh Valve, Foundry & Construction Company, at Twenty-sixth street and Allegheny Valley Railway, is rapidly nearing completion and will be occupied in a short time. This foundry is one of the largest in the Pittsburgh district, and is equipped with modern appliances throughout. It is the intention of the company to centralize their foundry operations in the new plant, and when it is ready for operation the foundries downtown, now connected with the Atwood & McCaffrey works and Shook-Anderson Mfg. Company and the foundry of A. Speer & Sons, will be abandoned. The Pittsburgh Valve, Foundry & Construction Company were organized about a year ago and issued capital stock to the amount of about \$1,150,000. G. E. Klingelhofer has retired as general manager and has been succeeded by C. R. Rhodes, formerly with the Shook-Anderson Mfg. Company. The new company acquired the plants of Atwood & McCaffrey, Pittsburgh Valve & Machine Company, Limited; Shook-Anderson Mfg. Company, the pipe fitting department of Wilson-Snyder Mfg. Company and the foundry of A. Speer & Sons. The officers of the concern are Henry M. Atwood, president; J. T. Speer, vice-president; C. A. Anderson, treasurer, and Moses Atwood, secretary and general sales agent. The company are engineers, founders, pipe fitters and machinists, and do a general business in steam piping for high pressure power plants. They also make all kinds of pipe, globe and gate valves, fittings and appliances for steam, water and hydraulic work.

New York City Notes.

Trade in general continues very good. Some plumbers are finishing up their old jobs, with only routine work ahead, but there are a number of new jobs about to be given out which will keep many busy all winter.

* * *

Among the new plumbing jobs now under way are an office building at 114 Liberty street, which is being done by John McMillan; a tenement at Seventy-eighth street and First avenue, by Joseph Bloch; a house at 8 West Fiftieth street, by J. P. Knight, and telephone buildings in West 124th street and East 124th street, by James Armstrong. Levins and Hannegan are busy with tenements in Mott street, Sullivan and Grand streets, West Thirty-ninth street and Tenth avenue.

* * *

The change in the city administration which will take place on January 1 will probably make many changes in those city departments with which the master plumbers do business. In addition to possible political changes, the new city charter changes many of the departments, as the Building, Sewer and Water Departments come under the control of each Borough President, with different rules probably obtaining in each borough.

* * *

The issuing of plumbers' licenses is a matter which has not been settled during the past four years, and which does not appear to be definitely fixed in the new charter. The Examining Board of Plumbers seems to be the most logical power to issue the licenses, as the body that makes a licensed plumber ought to have the power to take away his privileges when he violates rules or goes out of business.

* * *

Manhattan Branch are making great preparations for their annual entertainment and reception, to be held on Wednesday evening, December 18, at the Lexington Opera House. The Arrangement Committee, consisting of Messrs. Schnaier, Donohoe, E. J. Brady, Cummins and Boyd, with their associates, Messrs. Malcolm, J. W. O'Brien, Bryant, Tuomey, C. Tucker, I. J. Brown, J. F. Kelly, McCune, Hill and McQuillen, are sparing no efforts to make it the best in the history of the association. Tickets and boxes can be obtained from B. F. Donohoe, 1112 Park avenue, New York.

To Remove Scale from Boilers.

The use of soda for the removal of scale from boilers, says the *Decorators' Gazette and Plumbers' Review*, has long ago been advocated, and put into practice with varying results, depending, no doubt, upon the nature of the water into which it is introduced. Though it is now largely discredited in England, there are evidently still some who think it an efficacious solvent of scale, for, says a German contemporary, there is nothing more effective, and at the same time less expensive and easier to use, than soda; and that without analyzing the water used for the boilers. When filling the boiler add to the water so much dissolved soda that a strip of red litmus paper is distinctly, but not too much, blued. During working add regularly so much soda that the coloring of the paper faintly continues. In order to test the water blow off a little from the discharge cock, then shut it off so that only a few drops will run out, which, if allowed to drop on the litmus paper, should show the blue color in one or two minutes. Should this not take place, then more soda must be added, and, on the other hand, if the paper quickly shows a decided blue, no more soda must be put in. With a little experience it is easy to gauge the quantity of soda, and it will only be required to make tests once or twice a week. Soda prevents, or at least retards, the formation of hard scale, and more sediment is found instead. Old scale is also gradually loosened, and where it has been allowed to accumulate it is well to clean the boiler, when commencing the soda treatment, every two or three weeks. If there is no incrustation cleaning two or three times a year will be sufficient.

Heating and Plumbing Notes.

BURDETTE RAYNOR informs us that he has sold out his plumbing and heating business at Center Moriches, N. Y., and is about to open a shop in Southampton, L. I.

THE NORWALK HEATING & LIGHTING COMPANY of Norwalk, Conn., inform us that they are installing Kelsey Generators for heating the residences of William McMahon of South Norwalk and M. Willard, Spring Hill. They are installing a steam plant for B. F. De Klyn, using a Mercer Boiler, and are placing a large Gorton Boiler in the residence of W. P. Eno at Saugatuck, Conn.

T. J. CRONIN advises us that he has opened an office and branch of his plumbing business in Binghamton, N. Y., but that he will continue the shop at the old stand in Lestershire.

WILLIAM H. GORSLINE, president and treasurer of the Rochester Sewer Pipe Company and president of the New York State Sewer Pipe Company, died on November 9, at his home in Rochester, N. Y., aged 72 years.

THE GEORGE A. WEAVER COMPANY, Newport, R. I., have installed 12 Winchester Boilers during the past six weeks.

HENRY E. WEIBER of Kingston, N. Y., has been awarded the contract for installing the steam heating for the addition to the post office and custom house at Newport, R. I. His bid was \$1080.

JOHN E. JOHNS of West Scranton, Pa., has the contract for plumbing the West Side Hospital in that city.

FRANK N. SMITH, Susquehanna, Pa., a well-known plumber and tinsmith, died on November 3 from dropsy, aged 50 years. He is survived by a wife and five children.

JOHN T. SADLER, Elmira, N. Y., has the contract for the plumbing and gas fitting in the new Federal Building in that city.

ALBERT QUITTERFIELD and Homer Bruce, South Troy, N. Y., have been granted a patent for heating buildings.

HENRY BEUTELSPACHER, Bridgeport, Conn., has the contract for the copper work and steam piping on a new oyster steamer for H. J. Lewis & Co.

COCKRILL BROTHERS, Jackson, Tenn., have the contract for plumbing a large addition to the plant of the Southern Engine & Boiler Works at that place.

T. P. PERRY & SON, Ansonia, Conn., have the contract for plumbing and heating the new addition to the Hotel Dayton in that place.

E. W. PECK, Derby, Conn., is doing the plumbing in a parochial residence in that town in which three new bathrooms are being equipped with the latest improved fixtures.

SHUMWAY & RILEY, Northampton, Mass., are installing three Hot Air Furnaces in houses for James Reed, and are heating four houses for J. H. & W. E. Stetson with Furnaces.

EDWARD RADDING, Holyoke, Mass., is to erect an apartment house for 12 families which will have a modern system of heating and plumbing.

THE city of Manchester, N. H., has passed an ordinance creating a board for the examination of plumbers.

THE SPRINGFIELD FIRE & MARINE INSURANCE COMPANY of Springfield, Mass., are to erect a fine new building, to be equipped with a modern system of heating and plumbing.

THE CARMAN-THOMPSON COMPANY of Lewiston, Maine, have just received the contract for a steam heating plant for the new wing of the Insane Hospital at Augusta.

THE A. L. & E. F. GOSS COMPANY of Lewiston, Maine, have the contract for heating and plumbing the new Park street annex to the *Journal* Building in that place. They are also remodeling the plumbing in the Blanchard House.

THE Plumbing Board of Bay City, Mich., have organized, electing City Engineer George Turner as chairman and Health Officer Gilbert as secretary. Engineer Turner, Dr. Erwin and F. C. Finn have been appointed

a committee to draft rules on plumbing to govern the plumbers of the city.

THE plant of the Carnegie Tube Company, at Heidelberg, about 1 mile south of Carnegie, Pa., is approaching completion and is expected to be ready to begin operations by the first of the year.

J. W. CUTT & Co., Philadelphia, Pa., have the contract to install a low pressure steam heating plant in the Baptist Church, at Thirty-first and Diamond streets, in that city.

THE works of the Harrisburg Pipe & Pipe Bending Works, Harrisburg, Pa., are being run night and day. The Pipe mill, which has been idle for a short time for repairs, has been started up and will be run to its capacity. The Coil department is very busy.

THE plant of the Eastern Tube Company, at Zanesville, Ohio, whose offices are in Pittsburgh, recently shipped a consignment of Pipe to London, England.

THE offices of the National Tube Company will be removed from Conestoga Building and Empire Building to the Frick Building, Fifth avenue, Pittsburgh, when the latter structure is completed, about April 1, 1902.

MEMBERS of the Executive Committee of the Texas State Association of Master Plumbers have met the Attorney-General of the State, who recently brought suit against the members of the association on the ground of maintaining a trust. The result of this special meeting, which was designed to induce the Attorney-General to withdraw the suit, is unknown, as the Attorney-General has refused to make a statement.

THE Supervising Architect at Washington, D. C., will receive bids until November 29 for heating and ventilating the Post Office Building at Kansas City, Kan.

A RUMOR is current in the heating trade in New York that a new house will engage in the manufacture of heating boilers by the first of the year. The report has it that this house will be composed of two or three salesmen who are now engaged with the other boiler houses, and who are contributing to the success of these houses through their ability to sell goods. The enterprise is said to be backed by New York and Springfield, Mass., capitalists.

EDWARD LANDIS & BROTHERS, 609 North Ninth street, Reading, Pa., are doing the plumbing in 14 houses for Samuel Blatt, eight houses for Ebbert & Hain, seven houses for Francis Schide and six houses for S. Geho. They are also installing a steam heating system and doing the plumbing in Dr. E. Kiefer's residence, besides having a number of other contracts.

THE Board of Health of Buffalo, N. Y., have found objectionable features in the plumbing in the new terminal station of the International Traction Company, which they have ordered to be removed.

THE SMITH HARDWARE COMPANY, Hamilton, N. Y., have been awarded the contract to install the heating apparatus in the new Madison Union School in that town.

THE Board of Examining Plumbers of Grand Rapids, Mich., have decided that those master and journeyman plumbers who have been in business in the city for more than two years need not take the examination to secure a certificate of competency. They have also decided not to allow any applicant for a license to take the examination unless he has served an apprenticeship of five years, and that it shall not be necessary for more than one member of a firm to secure a license as a master plumber. In cases where a member of a firm desires to work it will be necessary for him also to take out a journeyman's license. Those who desire to work must obtain their certificate of competency and license before November 23.

THE ANDERSON COUPLING COMPANY, Portland, Conn., are putting on the market Anderson's Patented Lead Pipe Expanding Pliers, which, they claim, is the only tool ever produced that will turn out a collar on lead traps and lead pipes. In expanding the ends of the lead pipe by use of these Pliers there is no danger of stocking or bending the pipe, and the tool has been referred to as the "plumber's best friend." The price of this tool

is reasonable, and many of them are now in successful use.

SECRETARY GOMBERS of the National Association of Master Steam and Hot Water Fitters is renewing the interest of many members in the association by sending from the Wool Exchange Building, New York, with the compliments of the association, handsome engravings suitable for framing of "Watt's First Experiment," and as a companion piece the picture from *Life*, entitled "If James Watt Should Return to Earth." The pictures are accompanied by the Standard Flange Schedule of 1894 and the High Pressure Flange Schedule of 1901.

New Firms and Changes.

THE plumbing firm of Parsons & Newton, Stockbridge, Mass., have dissolved, and each member of the firm will engage in the same line of business for himself.

FRED. G. SEARLES has opened a plumbing shop in the Brainerd Building, at Mystic, Conn.

THE CRESCENT BRASS & IRON COMPANY and the Hart Company of Detroit, Mich., have been consolidated under the name of the Buckley-Hart Mfg. Company. The consolidated concern will continue to manufacture the same line of goods that have been made by the separate company—namely, Plumbers' Supplies, Lawn Sprinklers and Nozzles, Hardware Specialties, Brass and Bronze Vault Doors, Elevator Inclosures, Grills, Toy Banks, Furniture, Hardware, Bar Trimmings, &c.

A LETTER from David H. Murphy, one of the leading and best known plumbers of Marion, Ind., informs us that he has consolidated his business with John McDonald. The new firm are known as Murphy & McDonald. They will continue to do a plumbing, gas fitting and general jobbing business.

Stove Polishes.

Stove dealers frequently have a demand for stove polish of the same kind as they use. As the materials used in the making of stove and metal polishes are inexpensive, and as the machinery (if indeed machinery is required at all) is simple, and is adapted for hand power, the preparation of these indispensable articles of everyday use offers a legitimate field for the small manufacturer, as well as for the dealer who has sufficient space at his disposal in which to carry out small manufacturing processes of this nature.

Stove polishes, says a writer in the *Decorators' Gazette and Plumbers' Review* of London, are frequently referred to simply as "blacklead," a term which indicates sufficiently clearly their principal ingredient. Most of the black stove polishes are offered in the form of solid sticks, cubes, cakes, or balls, which are usually wrapped in paper, and often possess a highly glazed surface. The paste and liquid polishes are less used now than formerly, and are not wholly satisfactory, as it is exceedingly difficult to prepare a paste or a liquid from which the fluid medium will not rapidly evaporate. To the solid forms, therefore, attention will in the first place be directed.

The base of the ordinary solid black stove polish is blacklead, which is also known as plumbago and as graphite. In composition graphite is an impure variety of carbon. It is a mineral, and possesses a certain degree of metallic luster, which can be augmented by mechanical means after the substance has been powdered—a fact to which its utility as a metal polish is due. Graphite occurs in various parts of the globe in crystalline masses, and exhibits considerable variations in purity as well as in physical properties.

There are numerous uses in the arts and manufactures to which graphite is put. Among the chief of these are the manufacture of "lead" pencils, the manufacture of crucibles, retorts and other utensils used in dealing with refractory metals, the compounding of lubricants, and lastly in the branch of industry we are now dealing with—the preparation of black stove polishes.

Fine Cumberland graphite, of specific gravity 2.34 per cent., suitable for the making of pencils, contains (according to C. Mène) 91.5 per cent. of carbon and 7.3 per cent. of ash. Less pure varieties may contain from 80

to 70 per cent. of carbon, and from 11 to 20 per cent. of ash. It should be noted that as the carbon decreases the ash increases in quantity.

It is obvious from what has been said above that the various varieties of natural graphite will possess different values according to the purpose for which they are required.

For the purpose of making stove polish it is not permissible to use any graphite that may happen to come to hand. It is necessary to select the article with some care, and often to blend two or more grades together, in order to bring the product up to the desired standard. There are two points of pre-eminent importance in selecting graphite for stove polish making. One is the softness of the graphite; the other is its capacity to produce a highly lustrous surface after it has been reduced to a fine powder. It often happens that a sample of the native mineral exhibits one of these properties in a noticeable degree, and is lacking in the other; hence the buyer has to be on the alert, otherwise he may find that he must either turn out an inferior product, or that the expense involved in reducing the raw material to the proper degree of fineness is so great as to curtail in no small measure the profits of the manufacture.

The finest quality of graphite which is offered for sale in considerable quantities goes by the name of "Ceylon blacklead." Whether the whole of the material so designated is derived from the Ceylon mines is, perhaps, open to question, as the description has become, to some extent, a trade name for a somewhat hard but brilliant polishing graphite. Softer and more easily handled qualities are derived from Central Europe (Austria, Hungary, &c.), but these grades often, and indeed usually, lack high polishing properties, and must therefore be blended with a higher grade lead of the Ceylon variety. Large quantities of graphite are found in America, both in the United States and in Canada, and the material is excellently suited for stove polish making, as it combines the softness of the Continental grades with the luster of the Ceylon graphite. For this reason many American makes of stove polish are exceedingly difficult to beat in point of quality. An additional advantage secured by the American manufacturer consists in the fact that he is in a position to avail himself of the large quantity of "gas black" produced in the country. This material, besides possessing great staining properties which render it valuable as a paint pigment, is somewhat granular in texture, and is capable of taking on a certain degree of polish when rubbed. Hence when it is introduced as an ingredient of stove polish, it improves the color without injuring the polishing properties of the product.

The raw materials then with which the black stove polish maker starts are blackleads of varying grades, and American gas or carbon black. It is true that many makes, especially of the cheaper and commoner varieties, use other substances as well in their polishes. For example, water, glycerine, vinegar, acetic acid, sulphuric acid, green copperas, treacle, are specified in considerable quantities in many recipes. It is advisable, however, to limit the use of such assistants as much as possible, inasmuch as, although certain of them such as water and glycerine do not injure metal work, the majority are powerful corrosive agents, and the habitual use of polishes which contain them in considerable quantity is likely to result in damage to the metallic surface under treatment. It is often found that the graphite which is being used contains sufficient moisture and is of a sufficiently soft texture to enable the material to be molded with ease in the hydraulic press; on the other hand, it may happen that the material is somewhat dry and granular, and will not bind well, this being especially noticeable when a considerable proportion of carbon black has been added. In such cases the addition of a proportion of liquid binding material is necessary, and a mixture of water and glycerine will be the least hurtful to the metal. It will usually be found that the better and purer the quality of the raw material used, the less chemical matter is it necessary to introduce into the stove polish.

It is desirable now to consider the mechanical proc-

esses through which the raw materials pass in order to transform them into the finished and salable article. As a rule, three distinct operations are necessary. These are: 1, Powdering; 2, sifting; 3, pressing or molding. All grades of blacklead or graphite which are to be used for stove polish making must be reduced to as fine a state of division as possible, in order to obtain the maximum luster from the finished article. Only dry grinding methods are applicable in this case, as it has been found that if the graphite is ground in water it loses its luster. As a matter of fact, if so called blacklead powder is examined under the microscope, it will be found to consist of innumerable flakes or facets, the surface of which has become burnished by the powdering process. For this reason the ordinary edge runner mill has for long been considered the most suitable mechanism by which to effect the grinding. The runners should be stone—either granite or Derbyshire stone—and it is preferable to have the bed of the pan stone also, although it is quite permissible to have the latter of iron. The mill should not be too large, a diameter of 2 to 4 feet being ample in most cases. When very large mills are used, the powdered product is liable to be of extremely uneven composition, and the sifting process is thereby rendered more difficult. The proportion of water or glycerine which it may be considered necessary to add during powdering should be accurately judged, sufficient being added to prevent the material flying about in the form of dust, and not enough to cause the product to become pasty or to lose its luster.

The process of sifting follows on the powdering process. It is well known that the quality of stove polish depends largely on the smallness of the particles of which it is composed; therefore, as the grinding under the edge runner is certain to leave a proportion of particles of considerable size, it is necessary to remove these if a first rate article is required. It may be said at once that many stove polishes are made from materials that have not been sifted, and, of course, the necessity for this process will depend, to a great extent, on the care with which the powdering has been conducted, as well as on the quality of the article it is desired to produce.

There are various forms of sifters on the market. Among them are brush sifters, in which a spiral brush forces the small particles through a wire gauze screen; centrifugal sifters, in which the powdered material is inclosed in a wire gauze cylinder which is rapidly rotated, thereby causing the finer particles to escape; and vibrating sieves or riddles, which, although the simplest in their action, are suitable only for the separation of moderately coarse particles.

The presses and molding machines are so numerous in form that it is impossible within the limits of an article like the present to do more than simply refer to them. They vary not only in the mechanical devices adopted to produce the pressure, but also in their suitability for various classes of stove polish. There are hand presses actuated by a rack and pinion movement, by a lever, or by a screw; there are large power presses of varying construction, and there are numerous modifications of the hydraulic press.

The highly polished blackleads of to-day owe their brilliant luster in no small measure to the powerful presses now in vogue. Pressing and burnishing thus form one operation.

The following are selected recipes for cake blackleads, and may be taken as typical examples:

Fine Quality Dry Stove Polish.

	Parts.
Selected Ceylon graphite.....	100
American gas black.....	10
Acetic acid, diluted with an equal volume of water.....	2

Recipe No. 2.

	Parts.
Good Ceylon graphite.....	100
Austrian graphite.....	50
American gas black.....	5
Treacle	1
Glycerine, diluted with twice its bulk of water, a sufficiency.	

Recipe No. 3.

	Parts.
Good Ceylon graphite.....	100
Powdered ivory black.....	20
Green copperas.....	40
Glycerine, diluted with twice its bulk of water, a sufficiency.	

THE DAY CORNICE CLASS AT THE NEW YORK TRADE SCHOOL.

Owing to the excellent course of instruction given in the cornice and skylight class at the New York Trade School at Sixty-seventh street and First avenue, New York City, those young men who secure graduating certificates have not only acquired a considerable skill in the use of the tools and machines and in working sheet metal, but also have obtained a good mastery of pattern cutting. They are well prepared to enter upon the practical work of their trade, lacking only the experience gained from working in the shop and upon buildings. The evening class in this trade has been popular ever since it started, and on October 14 it opened practically full. Attention is specially called at this time to the day cornice class, which opens on December 9, so as to allow



The Day Cornice Class at the New York Trade School.

ample time for correspondence with the school to learn what is included in the exhaustive course of instruction given and the benefit to be derived from taking it.

The class is under the superintendence of William Neubecker, a practical cornice maker with a wide experience, who has superintended a large shop in which were constructed galvanized and copper cornices and skylights for some of the finest buildings in the vicinity of New York. After the pupils are taught the proper use of the hand tools—snips, soldering coppers, &c.—they are instructed in the operation of the various machines, including squaring shears, cornice brakes and circular molding machines. As soon as the first principles of the handicraft are mastered, the pupils are set to work making simple articles of sheet metal, similar to the small ornaments used on cornices. Instead of being given the pattern, or having the work cut out for them, as in the ordinary shop, they are given blue prints, drawn to various scales, of the different articles which they are to make. This system is followed up from the smaller pieces of work to window heads, bay windows, pediments, cornices, vases, and all the work which they do

during their stay at the school. From scale blue prints the pupils are required to develop patterns for the full size work, to cut it out, form it into shape and put it together. In some pieces of work three or four pupils are engaged and assist each other in its construction, attaching it, according to regular practice, to a brick or frame structure.

In the illustration presented herewith is shown an urn and pedestal, the joint work of two pupils of the day class of last year—M. Wolfstener of Washington, D. C., who made the urn, and B. Singer of Canton, Ohio, who made the pedestal. The base and cap molds of the pedestal were hammered up on a Robinson power circular molding machine, the fluted body being made by hand. The urn is entirely hand hammered work, made with the raising hammer on a raising block. The flutes on the top and bottom of the vase, including the circular ends, were made of zinc to avoid the scaling that would ensue from the use of galvanized steel. Four of the flutes were hammered up at one time and then dressed out smooth separately. The leaves at the top, which hold the acorn, were hammered up in the same manner as a circular molding and then cut out as required. The three flutes in the wing of the handle of the urn were hammered in one piece, while the edges of the handle were made from strips. As there are 16 flutes in the body of the urn, these flutes were fastened to 16 vertical sections of which it is composed.

This illustration of the work accomplished by students of the day class is presented to convey more clearly to the minds of those who may desire to take this course of instruction the proficiency acquired by those who give attention to their work while at the school. The New York Trade School has a thoroughly equipped shop, and in a few months the pupil is enabled to acquire both the handicraft and the knowledge of pattern cutting that can only be obtained in the ordinary way by the most studious application. Last year this class was patronized by only four pupils. Nevertheless the school authorities were willing to bear the expense attendant upon it. It would seem that such a valuable course of instruction is worthy of wider patronage, and we bring it to the attention of those who are interested in the cornice and skylight trade, so that a larger attendance may encourage the management of the school when the class opens on December 9.

International Tin Plate Corporation.

It is rumored that the American Tin Plate Company are negotiating for the purchase of the patents of the International Tin Plate Corporation, whose incorporation with a capital stock of \$125,000 was mentioned in our last issue. Whether or not the tin plate company will be successful in their effort is uncertain. It is understood, however, that those who are backing the new independent enterprise are unwilling to sell out their patents, believing that they have something that will enable them to compete successfully with the existing tin plate manufacturing interests. It is stated that the patents controlled by the International Tin Plate Corporation include the Allis-Andrews process for manufacturing tin plate. The claim is made that, by means of that process, the company will be enabled to turn out material at a much cheaper cost than can be done by the American Tin Plate Company under their processes; also that a better grade of plates can be produced. As mentioned in our last issue, the enterprise is being backed by substantial English capitalists, and it is contemplated to establish works not only in the United States, but also in Great Britain and Canada. Tests of the Allis-Andrews process made in Pittsburgh are said to have proved entirely successful. Report has it that the new enterprise will have a capital stock of about \$15,000,000.

THE work of enlarging the present large plant of the American Sheet Steel Company, at Vandergrift, Pa., by the addition of nine new mills, is progressing, and it is expected that the new mills will be ready for operation early next year.

Sheet Metal Monuments.

BY WILLIAM NEUBECKER.

A branch of sheet metal work to which little attention is given, except by those who make a specialty of it, is that of galvanized sheet metal monuments. When well painted in imitation of marble or granite the difference can hardly be detected. A monument which has been painted with three coats of metallic paint inside and outside and then the desired imitation on the outside will endure for years before any defect by rust would be noticed. In the accompanying illustrations are shown various designs and methods of construction, which may be interesting to those who contemplate doing work of this kind. There is no limit to the number of styles which can be gotten up, using a little judgment and study. In Fig. 1 is shown a simple form, with semi-circular top, A showing the front view and B the side, the front corners being broken, as indicated by C in side view. Diagram D shows a section through X Y, and shows how the corners are soldered, the raw edge at first and then the cove E set in afterward. It is sometimes the case that the base and slab are made in two sections, then the base is formed as at F and the slab H set into it and soldered around at the joint indicated by the arrow. Diagram K shows how the base is sometimes stiffened by inserting a joist, as at J. When soldering the back to the return strip, B in side view, the joint

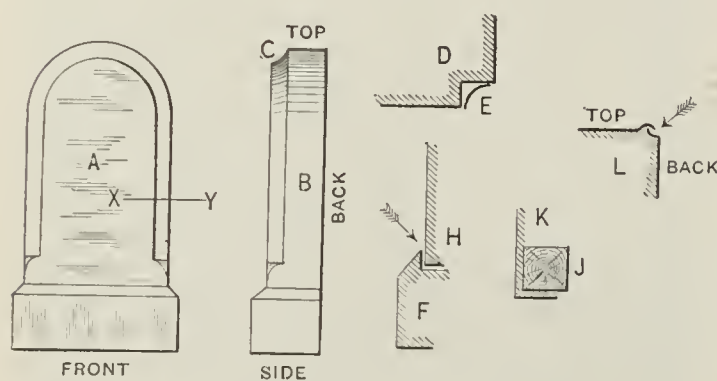


Fig. 1.—A Simple Form of Monument.

at the corner is made as shown in diagram L, the top or return strip is run through the thick edge machine, making a convex bead, while the back is run through the same machine, forming a concave bead; they are then placed in position, as shown, and floated with solder.

In Fig. 2 is shown another form of monument having a raised panel. A shows the front and B the side. A raised ornament or head can be placed at C, which is shown in section by D; the front face has a raised scroll, E, on each side, shown in section by F. When forming the front the panel should be formed onto it in one piece, as shown by the section (taken through H I) at L M J K, on which it will be noticed that the return strips have the thick edge or bead, as described in Fig. 1. By forming the panel as shown by J K in Fig. 2 we place the seams or miters connecting with the base and top at X X X X in front view. This avoids buckles, which would be apt to appear if the panel were soldered on separate. On this raised panel on front it is usual to place a name or date, which is accomplished by buying letters and figures cast of lead with or without beveled edges. These letters can be obtained in any size, from 1 to 6 inches, but when fastened to the panel they must not be soldered on the outside, as that would spoil the outline of the letter, they being soldered from the inside as follows: Having decided what name and date shall be placed on the panel, pencil lines are marked upon the panel, and the letters placed in their proper position, as, for example, E in diagram O. Scribe a pencil line around this letter, which, when the letter is removed, will look like E in diagram R. Then by means of the

rivet punch punch two holes, as shown by the arrow points in diagram S.

The letters or figures are now held carefully in position on the outside and soldered from the inside by means of soaking the back of the letters or figures through the small holes previously punched into the face of the panel, as is better indicated in diagram T, in which T shows the panel face, with the hole punched in same at U, while the letter V is held in its proper position and soldered at Y, on the inside.

In Fig. 3 is shown another style of monument a little more elaborate, a front and side view being shown; in the flat space A any name can be placed, while at B and C round columns are inserted of style similar to B. C shows how the monument is finished first and the column placed in afterward. When setting on the circular mold D E care should be taken to have the flat surface F D F in one piece, and not solder the semicircular piece D, as shown by the dotted line, as that seam would always show. In diagram F is shown an enlarged section through D E, showing how the circular faces are stripped square and then the cove H set in afterward, then mitered with the horizontal molding in the front view.

Fig. 4 shows an elevation of a square shaft with broken corners; the joints at A, B and C are constructed

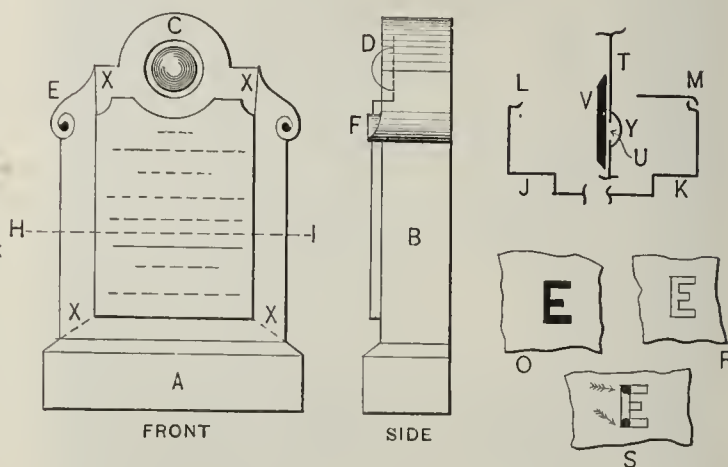


Fig. 2.—Another Form of Monument Having Raised Panel.

SHEET METAL MONUMENTS.

in a manner similar to that shown at H in Fig. 1, while the name, which would be placed at E in Fig. 4, is fastened as explained in Fig. 2. When fastening metal monuments wood bracing is let into the ground, over which the metal work is placed in sections, well braced, then soldered.

It is sometimes the case that the base of an old stone monument can be used on which to fasten the metal base, as indicated in Fig. 5, in which A represents the stone base, having a groove cut into same, as at C, into which the base B, having an edge bent on same as at X, is placed; it is then calked with molten lead, which secures the metal base; of course, additional bracing must be placed on the inside. In many cases a cast iron base or curb is placed into the ground, as indicated at A in Fig. 6; the metal base B, which is made of No. 20 galvanized sheet iron, is then bent in the manner shown, and bolted to the cast iron curb by the round headed bolts C fastening on the inside by the nut D, the inside band iron brace E resting on the curb C at F.

THE CLASON ARCHITECTURAL METAL WORKS, Providence, R. I., are now operating their new factory on Kinsley avenue, which is well equipped for turning out a large variety of metal work. We are advised that this concern are executing an extensive order for fire proof Metal Book Stacks for the Sayles Library, Pawtucket, R. I., and are also engaged on a number of important contracts for Skylights, Metal Window Frames and Cornices, and are making a lot of large Copper Revolving Ventilators with cowls, for a public institution.

The Tin Mill Wage Scale.

The tin mill lodges of the Amalgamated Association are now voting on the proposition to continue for three years the wage settlement made with the American Tin Plate Company in New York in September. It is understood that those lodges that have already voted are favorable to the proposition. A number of the lodges, however, are holding back their vote. The Amalgamated Association have until December 14 to send in their decision on the matter. So far as the workmen in the mills that are recognized by the American Tin Plate Company as union are concerned, the proposition is a good one, as it secures to them good wages and steady work for three years to come. The only drawback to the arrangement, from the point of view of the union workers, is that it does not include a number of the mills which were formerly recognized as union works. Should the vote of the Amalgamated lodges be unfavorable the present wage agreement will expire at the end of a year from the date of its signature.

Coating Terne Plates.

A correspondent of the *Decorators' Gazette and Plumbers' Review* of London received the following in answer

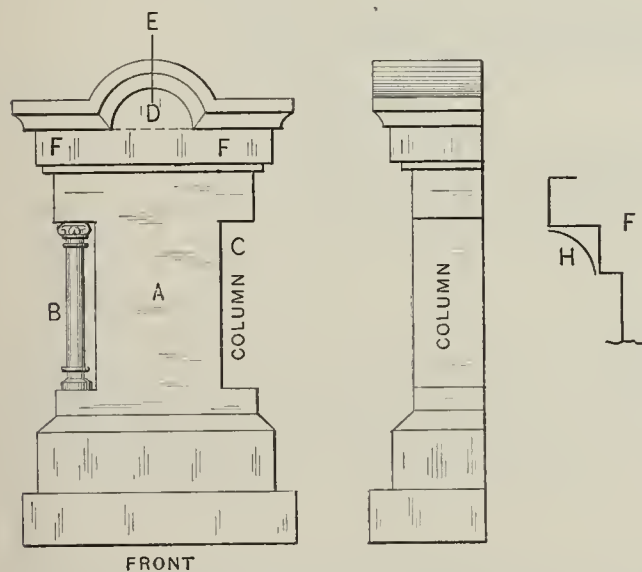


Fig. 3.—A More Elaborate Style of Monument.

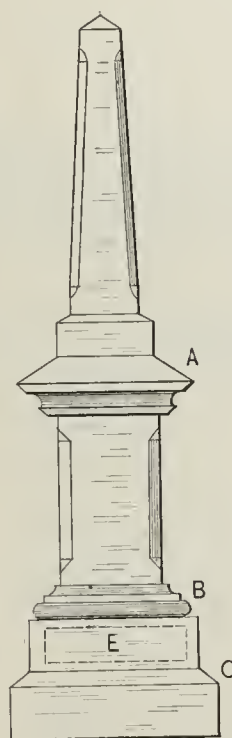


Fig. 4.—Elevation of a Square Shaft.

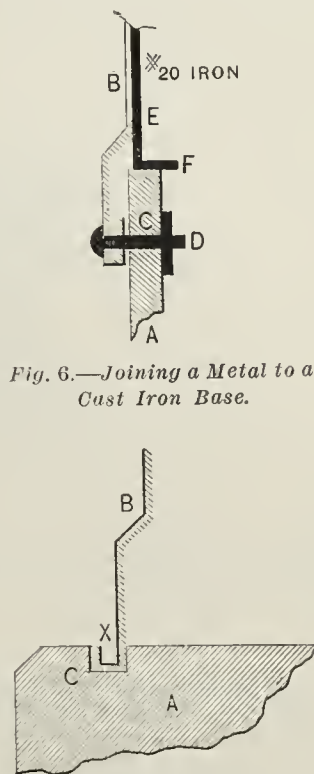


Fig. 6.—Joining a Metal to a Cast Iron Base.

Fig. 5.—Fastening a Metal to a Stone Base.

SHEET METAL MONUMENTS.

to a request for assistance in coating sheet iron so that vessels made of it could withstand the action of sulphuric acid:

The terne coating you are using—90 per cent. lead and 5 per cent. tin—is excellent, but, of course, a good deal depends upon the dipping, and for many purposes you could safely reduce the tin by half, bringing it to 2½ per cent. As far as sulphuric acid is concerned, try using pure lead alone, but the dipping process would have to be remarkably well done for it to stand. You should particularly test your marine acid (HCl) for selenium with a crystal or two of sulphite of soda, and reject if it gives a brick red precipitate. The merest trace plays perfect havoc with the dipping. But even with all care it is a question which can only be tested by direct experiment, and very doubtful in regard to the result. Moreover, while it might stand acid of one strength, say concentrated, it might not stand weaker acid, say chamber acid. The latter often contains nitrous acid, as it comes from the chambers, and that eats the body out of anything. We presume CO₂ is a clerical error for SO₂. The latter we should think worse than the sulphuric acid itself. If they are able to get a coating to stand they would revolutionize the whole acid trade and do away with carboys. Can they not get some Sheffield acid maker to work in concert with them, and test their casks with acid of different strengths against (a) pure lead, (b) ½ per cent. tin, (c) ¼, (d) 1 per cent., (e) 1¼, (f) 1½, and so on, up to 5 per cent. of tin? The writer found that even ¼ per cent. of tin enabled the “lead tinned” drum to withstand “turps.”

ROLLING MILL MACHINERY CONSOLIDATION COMPLETED.

At Pittsburgh last week deeds were filed by which the United Engineering & Foundry Company, organized in that city several months since, acquired title to the properties of the Frank-Kneeland Machine Company and the Lincoln Foundry Company. The property of the Frank-Kneeland Machine Company is located at Fifty-fourth street and Allegheny Valley Railway and includes 4¾ acres, on which are erected large foundries and machine shops. The price paid by the United Engineering & Foundry Company for this property is given in the deed as \$175,000. The property of the Lincoln Foundry Company is located at Sixty-first street and Allegheny Valley Railway and contains about 4 acres, on which are also erected foundries and machine shops. The price paid for this plant was \$160,000. These two concerns were taken over by the United Engineering & Foundry

Company at the time they were organized, but the deeds to the properties have just been filed in the courts.

In addition to these two concerns the United Engineering & Foundry Company also took over the Lloyd-Booth Company of Youngstown, Ohio, and McGill & Co., whose works are at Twenty-seventh and Smallman streets, Pittsburgh. The main plant of the United Engineering & Foundry Company will be located at Fifty-fourth street, where all kinds of rolling mill machinery, including shears, tin plate and sheet mills, will be built. The plant of the Lincoln Foundry Company will remain where it is and will be devoted exclusively to the manufacture of rolls. It is probable the plant of the Lloyd-Booth Company will be materially enlarged. It will be devoted to the manufacture of rolling mill machinery and rolls, and is one of the largest and most valuable plants owned by the United Engineering & Foundry Company.

The officials of the concern are: Isaac W. Frank, president; Charles H. Booth, first vice-president; Fred. A. Campbell, second vice-president; Edward Kneeland, treasurer, and Charles A. Satler, secretary. The Board of Directors consists of Isaac W. Frank, Otis H. Childs, Thos. J. Bray, Jr., Lloyd Booth, Edward Kneeland, Charles H. Booth, Fred. A. Campbell, J. J. Donnell, James H. Lockhart, Richard Garlick, W. L. Abbott and Charles E. Satler.

FLASHINGS.

THE YOUNGSTOWN IRON, SHEET & TUBE COMPANY of Youngstown, Ohio, have closed a deal for the purchase of the New Process Galvanizing Works recently established at Niles, Ohio. It is understood that the galvanizing plant will be removed to Youngstown and added to the large plant that the Youngstown company are now constructing in that city.

It is rumored that the American Tin Plate Company contemplate the gradual abandonment of the old system of manufacturing Tin Plate, and the introduction of the Monessen system at all their works. Should this plan be carried out it will involve a considerable reduction in the number of Tin mill workers from those now employed at the various plants of the American Tin Plate Company.

PRESIDENT T. J. SHAFFER of the Amalgamated Association has sent out a circular to the officers of the various Tin Plate lodges of the association, denying the report that the workmen of the Star and Monongahela Tin Plate mills in Pittsburgh were organizing lodges independent of the Amalgamated Association.

Work is being pushed as rapidly as possible on the new Tin Plate plant of the Jackson Iron & Tin Plate Company, Clarksburg, W. Va. The mill building will be of steel construction, 150 x 350 feet in size, with a railroad track running the entire length of the building. The necessary machinery is now being installed. The company have let the contract for the erection of a water tower with a capacity of 40,000 gallons, for the protection of the plant from fire. The erection of the plant is proceeding under the direction of C. C. Moore, general manager, and William Collier, superintendent of the company. It is expected that everything will be completed and in running order by or soon after January 1.

GROUND was broken last week for the erection of a new Tin Plate plant at McKeesport, Pa. It is stated that the new works will be a ten-mill plant, giving employment to about 700 men and having a capacity of 40,000 boxes of finished Plates per month. The plant is to be located on the Port Vue side of the Youghiogheny River, opposite McKeesport.

THE corrugating plant at the Laughlin Sheet mill plant, at Wheeling, W. V., was started last week, and it is expected that two of the new Sheet mills will be put in operation within a week or so.

NOHSEY & SCHWAB have now entered upon the occupancy of the ground floor of a new building erected at 412 to 416 Second street, Memphis, Tenn., which has been designed and especially fitted up for their class of work. The floor is 100 x 65 feet. The firm have a large amount of business on hand. They have contracted to do the whole of the Tin and Galvanized Iron work on a new hotel that is being built at Clarksville, Miss., and are also doing the Slate and Tin work on the Court House, at Tunica, Miss., and the Sheet Metal work on the Memphis Light & Power Company's office. They have just completed the Tin Roofing on the grand stand of the Memphis Trotting Association.

On the evening of Saturday last the clerical force of the St. Louis branch of the Berger Mfg. Company enjoyed a dinner in the banquet hall of the Planters' Hotel, through the hospitality of S. Y. Buckman, manager of the branch. The affair was the occasion for several good speeches, among the speakers being Messrs. Buckman and Burton. Mr. Buckman touched upon the company's policy and business methods, and commended the personal application shown in the various departments of the concern. His remarks were peculiarly appreciated, displaying as they did the thorough good fellowship and understanding which exists among the company's employees. This topic of *bon camaraderie* was also referred to by Mr. Burton, who commended highly the company's policy, methods, &c., and advanced the assertion that strikes and disputes would soon be things of the past if other manufacturers were as liberal and fair minded in their methods.

A NOTABLE feature in the Tin Plate industry of South Wales, says the *Iron and Coal Trades Review* of London recently, has been the restarting of so many works, some

of them after years of idleness. At the end of September there were 377 Tin Plate mills at work, as compared with 349 mills working at the end of August. Thus there has been an increase of 28 mills in the course of one month. These 28 mills would have a producing capacity of about 15,500 boxes per week. As compared with a year ago, however, the increase has only been 18 mills, the figures being 377 and 359 respectively. There are at present 60 idle mills. In September the total exports of Tin Plates and Black Plates amounted to 29,745 tons, and in August they were 25,684 tons, or an increase for September of 4061 tons.

At the Curtis Sheet mill at Zanesville, Ohio, two mills have been started up and are working smoothly. The other two mills are expected to be put in operation by December 1.

THE building of the new Sheet mill of the Sharon Steel Company, Sharon, Pa., has been delayed somewhat by the inability of the company to obtain sufficient supplies of structural material. Work on the new plant, however, is being pushed as rapidly as possible, and it is expected that it will be in operation in the early part of next year.

THE AMERICAN TIN PLATE COMPANY have sold what remains of their plant at Blairsville, Pa., to the Columbia Plate Glass Company. The old Tin Plate mills will be torn down and removed to some other location.

H. J. PRATT & Co., Springfield, Mass., have completed the Sheet Metal work on one large building for J. Cooley, and are about engaging on the Metal Work on another block of similar character.

THE Master Tinnners' Association of Memphis, Tenn., have been incorporated by Henry Tohsey, Jacob H. Schwarzenberg, Charles Wesendorf, D. Lineham and A. W. Burdick.

THE LALANCE & GROSJEAN MFG. COMPANY will shortly put into operation the foundry, 50 x 90 feet, which has been in course of erection at the company's Tin Plate works at Harrisburg, Pa. There will be two cupolas.

NEARLY all the contracts for the new plant of the Rolling Mill Company of America to be erected at South Counellsville, Pa., have been placed and excavating for the new building has been started. The initial plant will consist of six Sheet mills, but the buildings will be laid out with a view of making it a 20-mill plant in the future.

CHARLES E. POPE of Charles E. Pope & Co., Iron and Steel factors, of Pittsburgh, and also president of the Pope Tin Plate Company of that city, has gone to California to recuperate his health.

THE report that some new mills will be added to the Wellsville Works of the American Sheet Steel Company, Wellsville, Ohio, is incorrect. Ground has been broken for the bed plate of a large new engine to be installed, from William Tod Company, Youngstown, Ohio, and this probably gave rise to the report that some new mills would be added.

THE MANOGUE-PIDGEON IRON COMPANY, Memphis, Tenn., importers and jobbers of Steel, Railway Supplies and Tin Plates, owing to the great increase in business have recently enlarged their main storehouse building by a brick addition, which will double their storage capacity.

THE Sheet mill plant of the American Sheet Steel Company, at Dennison, Ohio, which was closed temporarily on account of the scarcity of Billets, is again in full operation.

THE MAX AMS MACHINE COMPANY, 372-374 Greenwich street, New York City, are about to erect a machine shop at Hoboken, N. J., for the manufacture of Canning Machinery as applied to a new method of making Solderless Sanitary Cans. Plans for the buildings have just been completed and the matter of equipment is about to be considered.

E. VAN NOORDEN COMPANY, 944 Massachusetts avenue, Boston, Mass., are sending out their Catalogue B, which describes in detail Skylights, Ventilators and Sheet Metal Work of Galvanized Iron or Sheet Copper for all kinds of buildings, in the construction of which

they have had 25 years' experience. They also manufacture Roofing, Gutters, Conductors, Shingles and Corrugated Iron for roofs and siding, metal windows and light iron buildings.

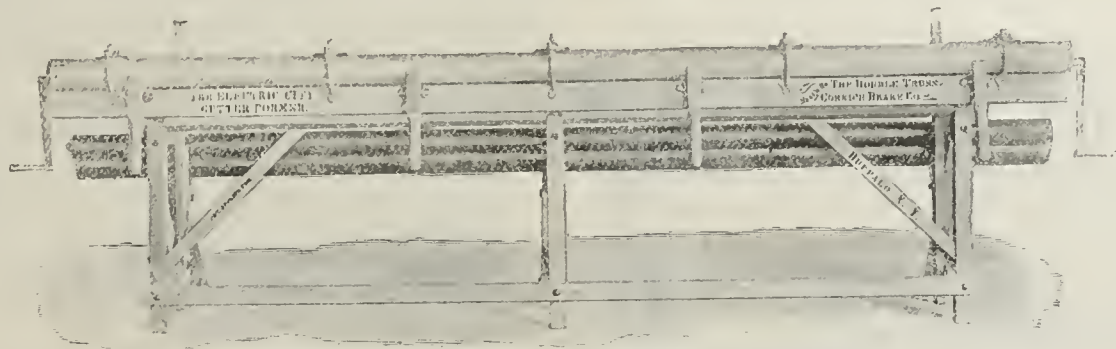
HUBBARD & Co., manufacturers of Shovels and Railroad Tools, are erecting a Sheet plant near their present works, at Sixty-second and Butler streets, Pittsburgh. The scarcity of Sheets and the consequent inconvenience and delay experienced in securing a sufficient supply for their manufacturing purposes have induced the company to enter upon the production of their own material. Plans have been prepared for two 22-inch mills, work upon which will be begun shortly. The plant will be located on the river front, east of the present works of the concern, and will be completed and ready for operation in February. The company will buy their own Sheet Bars to begin with, but later on may install open hearth furnaces and Bar mills.

AN American patent has been granted to Heinrich Wachwitz of Nuremberg, Bavaria, for a method of metal welding which consists in a process for plating Aluminum Sheets with copper or other metals. The process consists of applying to the surface of the coating metal, by hammering, a thin layer of aluminum, then applying the compound Sheet to the Aluminum Sheet or body to be coat-

enabling the sheet to be easily and quickly entered and retained in the groove; also that the beading rod adjusts itself right side up without any assistance from the operator.

The process of forming a length of gutter is thus practically a continuous operation, very simple and easily performed by unskilled labor. First, the strip of sheet metal is entered into the beading rod groove, and the rod given one revolution which forms the round bead on one edge of the gutter. Then, without changing any crank or making any adjustments, the operators grasp the forcing bar handles and swing it forward, partly around the forming roll, and back again onto its supports. The loose beading crank rod is then removed and the completed gutter is slid off the machine. The mechanism is arranged to allow the gutter to be drawn off from either end of the machine, enabling the machine to be set in the shop more conveniently for both light and space.

In operating the machine the beading rod is not withdrawn, and only one crank is removed, which is the only change or adjustment necessary to form the completed gutter. The only adjustments required are when changing the machine to form a different sized gutter. The capacity of the machine is stated to be from 600 to



The Electric City Gutter Former.

ed, and heating, rolling and working the same together. Sheets plated by the Wachwitz process are being manufactured in Germany and are said to be used for many purposes with success. It is understood that steps are to be taken to manufacture these Sheets in the United States.

W. A. GRODT, dealer in Tinware, Pumps and Fittings, has removed from Birmingham, Ala., to Frankfort, Kan., where he will make a specialty of Roofing and Cornice Work.

The Electric City Gutter Former.

The Double Truss Cornice Brake Company, Buffalo, N. Y., have just put on the market the Electric City Gutter Former, herewith illustrated. It is designed for forming the usual half round eave gutter in long lengths, with a round bead on one or both edges, and with either lap or slip joint as desired. The machine is referred to as being constructed and operated on an entirely new principle, different from any device ever produced for forming long length gutters. In devising the machine the makers state that they have overcome the weak points usually found in machines for doing this class of work. There are end journals and cranks on the forming rolls, but the rolls are secured rigidly to the bed piece of the machine at intervals along their entire length, and bend the material around the rolls with a "mechanical forcing bar," which is also secured to the bed piece at intervals along its entire length. This arrangement, it is explained, prevents any possibility of either the material or forming rolls springing in the center. The forcing bar, it is pointed out, applies a perfectly even tension, or pressure, against the material being formed throughout its entire length, insuring a perfectly straight and evenly formed gutter, each piece uniform in size and shape with the other, requiring no reforming or pressing into shape with the hands. The sheet metal is entered into the beading rod groove in an upright position, the weight of the metal, it is shown,

1000 feet of perfectly formed gutter per hour, according to the skill of the operator and the grade of material being formed.

Curious Products in Brass Wire.

Among the curiosities of Birmingham industry, according to an English contemporary, few are more remarkable and interesting than some branches of the brass wire trade. No inconsiderable quantity of the brass wire made in Birmingham finds its way to Old Calabar, on the Gold Coast of Africa, in the form of guinea rods, 3 feet in length, 100 of which form a medium of exchange for palm oil among the natives, representing to them the equivalent of the English guinea. Some years ago it was not uncommon for orders to reach Birmingham for these guinea rods to the extent of 20 tons each. Zanzibar takes large quantities of brass wire in coils. The native artisans at Unyanyembe convert the wire into coil bracelets, a ring of wire being sufficient to make two or three of the ornaments, each weighing about 3 pounds. From the Zambesi and other parts of Central Africa the demand is for heavier coils, the brass bangles worn by the natives averaging 4½ pounds each. In addition to rings of brass wire, large quantities of armlet and anklet rings, made of tube from 2¾ to 4 inches in diameter, are made in Birmingham for Central Africa. These rings, when "milled," burnished and lacquered, are used by merchants on the Gold Coast for payment of debts and exchanges with the natives, who bring down palm oil and other products, receiving the rings in barter. A single order received in Birmingham 25 years ago included 240,000 of these rings, 3½ inches in diameter, weighing, all told, over 23 tons!

It is announced that Andrew Carnegie has given the sum of \$500,000 to build and equip a technical college in Southern Scotland. The institution, it is said, will probably be located at Galashiels, in the County of Roxburgh.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

DETAILS OF AN UPRIGHT DRAWING BOARD.

From W. B., Philadelphia, Pa.—Kindly inform me through the columns of *The Metal Worker* how the straight edge on an upright drawing board is operated. By what mechanical device in the back of the board can it be moved up and down?

Answer.—There are several methods of accomplishing what our correspondent asks for, though the necessary mechanism is not usually placed at the back of the board. Whatever be the method employed it is evident both freedom and accuracy of movement must be insured in order that all lines drawn along its edge shall be exactly parallel. These results can perhaps be most perfectly and simply accomplished by the design shown in Fig. 1 of the accompanying illustrations, which will

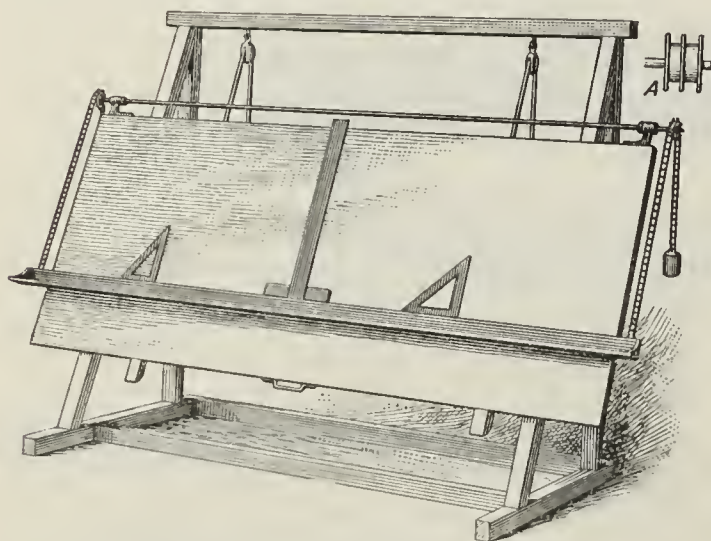


Fig. 1.—General View of Upright Drawing Table, with Movable Straight Edge.

the straight edge, running its entire length, upon which drawing instruments, &c., may be laid. The difficulty may be entirely overcome, though at greater expense, by placing another shaft and sprockets against the lower edge of the board, and, discarding the counterweights, passing the chains around the lower pair of wheels back to the straight edge, where they may be attached in such a manner as to take up any slack.

Instead of the sprocket wheels, flanged drums, such as shown at A, may be substituted at the ends of the shafting, around which is wound metallic tape in place of the chains. For this purpose the tape must be in two pieces at each end of the board. The piece which is attached to the straight edge at its lower end must be firmly attached at its upper end into one channel of the drum, while the other piece of tape is similarly fixed at its upper end in the other channel of the drum, its lower end being attached to the counterweight. Thus as one piece of the tape at each end of the board is being wound up by the upward movement of the straight edge the other piece is being unwound by the counterweight, and both being attached to the drum neither can slip.

The drawing board is usually suspended from the upper beam of the frame work by means of ropes attached to it at the back, which pass over pulleys, as shown, to counterweights behind. This permits the entire board with its attachments being raised or lowered at pleasure, the board being kept in a horizontal position

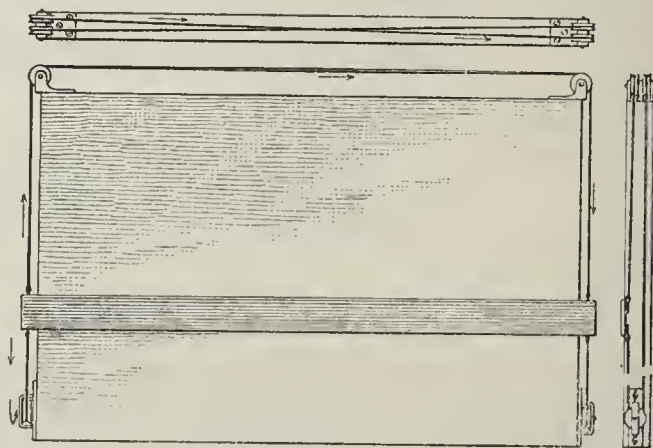


Fig. 2.—Drawing Board, with Movable Straight Edge Operated by Means of Cords and Pulleys.

DETAILS OF AN UPRIGHT DRAWING BOARD.

require very little explanation. A pair of bearings are screwed to the top edge of the board, through which passes a rod or piece of small shafting, running the entire length of the board and extending sufficiently beyond at each end to receive a pair of sprocket wheels. Chain belts are attached to each end of the movable straight edge and are passed over the sprocket wheels and attached to a pair of counterweights sufficiently heavy to balance the weight of the straight edge when at the position most used. As both sprockets are firmly keyed to the shaft, any movement at one end of the straight edge insures an equal amount of motion at the other. Sprocket wheels and chains of the type used on bicycles will be satisfactory for the purpose, though chains of lighter weight, if constructed without play, will perhaps be more desirable. A small clip or slide fixed to the projecting ends of the straight edge at the back and passing behind or under the edges of the board will prevent the straight edge from lifting away from the face of the board.

As in the upward movement of the straight edge the chain is being passed over the wheels, some weight is being constantly transferred from the near side to the further side of the wheels. This would have a tendency to prevent the straight edge remaining at rest when at any position other than that near which the counterweights have been adjusted. As it is usual to incline the board somewhat, as shown in the figure, this difficulty is in part overcome by friction. With this in view it is customary to sometimes attach a tray or projecting shelf to

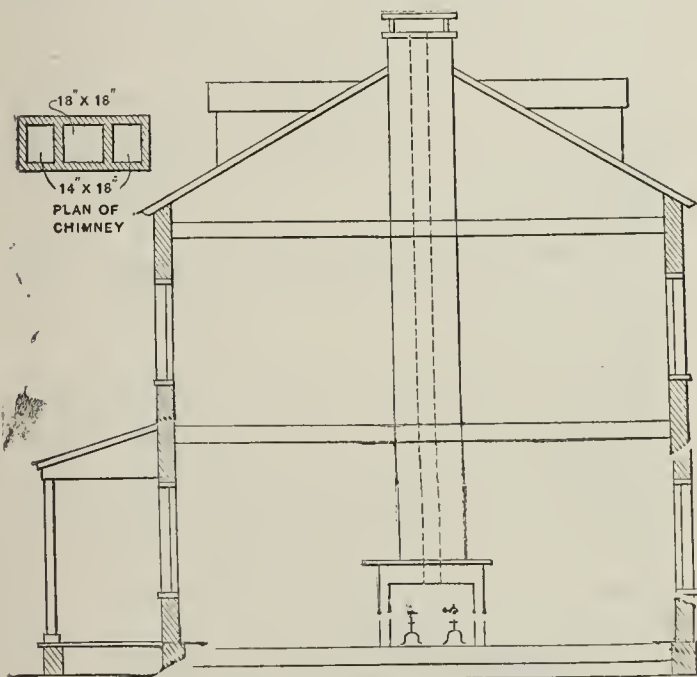
by means of cleats on the back, which slide against the sides of the inclined beams.

The parallel movement of the straight edge may also be accomplished by means of cords passing around a system of pulleys attached at the corners of the board, as shown in Fig. 2. This method is adaptable to boards of smaller size and is more liable to error on account of the stretching of the cords. If, however, very fine woven cord and smoothly running pulleys be used good results can be obtained. The cords are crossed at the top of the board, as shown in the top view. Thus the cord which is attached to the upper edge of the straight edge at the right end passes over the near pulley at the upper right hand corner of the board and over the further pulley at the upper left corner and thence down and around the lower pulley at the left side and is then fastened to the lower edge of the straight edge. If the direction of movement be followed along this cord, as indicated by the arrows, it will be seen that a downward movement of the straight edge at its right end will cause a movement in the same direction at the left. In the same manner an upward movement at the right would be transmitted to the opposite end through the other cord. The lower pulleys should be attached to the edges of the board by screws passing through slotted holes so that any slack in the cords occasioned by usage can be taken up.

Other methods, such as a rack and pinion movement, also a pair of levers crossed and working between the lower edge of the straight edge and a projecting strip on the lower edge of the board, have been used.

BACK DRAFT FROM CHIMNEY.

From Y. K., Pennsylvania.—I am having trouble with a chimney in a summer residence which has a large fire place at the bottom, used to burn regular cord wood 4 feet long. The wood is burned in a large open fire place in the living room, being laid on a set of fire dogs. The chimney has three flues in it, the flue in question, which is the middle one, being 18 inches square. The two side flues are 14 x 18 inches in size and are used in connection with fire places in chambers on the second floor. Each flue is separate and has no connection with the other, all leading directly from the fire places to the top of the chimney. The chimney acts in this way on any kind of a windy day, particularly when it blows from the northeast, north or northwest. The down draft blows the smoke into the large living room, so that the people must either stop the fire or open the windows to



Back Draft from Chimney.

allow the smoke to escape. I have been advised to close the top of the chimney somewhat to check the down draft, but instead of making it better it acts worse. The top of the chimney is covered by a large slate with openings at the top of the flue 12 inches high. The sketch given herewith will give an idea of the location of the chimney and its construction.

Note.—This is the season of the year when our readers are frequently called upon to overcome chimney troubles, and some of them can doubtless solve this problem without difficulty. It would seem that the trouble is due to the slate cover being placed too near the top of the chimney. The chimney, having an area of 18 inches square at the outlet, is cut down to a space 18 inches wide and 12 inches high, or reduced about one-third, by the slate cover. A simple remedy would be to remove the stone cap and watch the result. If it proved beneficial, and if it is necessary to use a cap to prevent rain and snow coming down the chimney, the supports to this cap should be elevated so that the openings in the side will be 18 or 20 inches high. If this is done, it is doubtful if the wind will drive the rising smoke down the chimney, but will rather blow it all out through the openings.

CONSTRUCTING A CHURCH FURNACE.

From Royal Heating Company, San Francisco, Cal.—Replying to the inquiry of your correspondent, "A. S.", in *The Metal Worker* of November 2, regarding the heating of his church, we would say that he can do the work in good shape with a 50-inch box stove, if he puts a good drum or radiator on the stove, and if the church is well built. We would advise the use of one 27 x 27 inch or 30 x 30 inch register face each for hot air pipe and a cold air return from the room to the heater so as to circulate the air. These two register faces should be placed together, right in front of the seats. Our experi-

ence has been that it does not make a particle of difference where the hot air enters a room, especially if there is a return pipe to the furnace. The Sunday school room can be heated by taking the hot air out of the top of the furnace, and taking the cold air from the floor of the room back into the furnace. There should also be provision for taking cold air from out of doors, so that when the church is warm and is occupied by the congregation fresh air will be introduced into the room.

We have just completed a job where we have used one register in a church, 40 x 60 feet in size, and we guaranteed that the variation in temperature should not exceed 5 degrees on four thermometers placed in the four corners of the room. Upon actual test, the variation was 2 degrees. We have another job in this city where we are warming one room, the floor level of which is 30 inches below that on which the furnace rests, but we exhaust the air from the floor level of the room we are heating, and discharge hot air into it near the ceiling. We have a number of jobs of fine work, where we take one large main pipe from the heater and have from six to ten branches running off from it.

TRADE NOTES.

THE NEW YORK ALUMINUM COMPANY, 142 Worth street, New York, have organized with the following officers: President, Herman Behlen; vice-president, August M. Kehn; secretary-treasurer, C. Pilz, and manager, William Gottlob.

THE UNITED STATES LAMP & STAMPING COMPANY recently organized at Moundsville, W. Va., with a capital of \$100,000, are about to erect a factory building in which they will employ 250 workmen. The directors of the new company are: Albert Schenk, Louis Stone, G. A. Wencher, C. W. Stewart, C. A. Weaver and J. N. Sanders.

THE HILL, WHITNEY & WOOD COMPANY, formerly of Waltham, Mass., have changed their firm name to the United States Aluminum Company, and their location to Pittsburgh, Pa. The company do work of all kinds in Aluminum.

THE GRIEVER & TWAITS COMPANY, Cincinnati, Ohio, manufacturers of Ornamental Wrought Iron and Metallic Art Goods, will be in the market for Power Presses, Power Riveters, Power Punches, Power Shears, Poppet Drop Hammers, Scroll Saws, Leather Belting, Hangers and Shafting, complete Plating Outfit, and entire equipment for gas producing plant, as soon as the new plant they are building at Indianapolis, Ind., is ready for occupancy. The company expect to move to their new location March 1, 1902.

THE OHIO GALVANIZING & MACHINE COMPANY have let contracts for the erection of their new plant at Niles, Ohio. The main building will be 50 x 200 feet.

THE VARIEGATED SLATE COMPANY of 419 Market street, Camden, N. J., have been incorporated with a capital of \$200,000, by Geo. S. Matchett, Chas. Burton and M. M. Child. The company will mine Slate.

THE CENTRAL STAMPING COMPANY, after January 1 next, will occupy the entire building at 24 Cliff street, New York City, which is being entirely remodeled to accommodate their business. The company for some years have occupied two floors at 25 Cliff street. Their new offices at 24 Cliff street will be much lighter and more spacious. In the basement they will carry a small stock to accommodate pick-up buyers. The first and second floors will be devoted to sales and sample rooms and the third and fourth floors to counting room and offices.

O'NEIL & GILMER are a new firm who have recently gone into the retail Hardware, Plumbing and Furniture business at Sioux Falls, South Dakota.

During the past fiscal year the State of New Jersey chartered 2342 corporations and received therefrom in fees the sum of \$558,369.54, an increase of \$168,424.67 over the receipts from this source in 1900. This total includes the fees for filing the papers of the United States Steel Corporation, which amounted to \$220,000.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has advanced 1c. per lb.
Copper prices are unchanged; demand is slow and for small lots.
Pig Lead is quiet and firm.
Spelter is very quiet and without change.
Antimony is unchanged.
Nickel is firm and unchanged.
Aluminum is active at former prices.
Tin Plates are rather quiet; jobbers' prices are softening.
Sheets are still scarce and in sharp demand, with prices strong.
Old Metals are strong, and in good demand.
Sheet Copper is active and firm.
Foundry Iron is very active and strong.
Hardware continues in good seasonable demand, with prices well maintained.
Plumbers' Supplies are moving in good volume, with prices strong in all lines.
Wire Nails are in good demand, but prices show some irregularity due to competition.
Cut Nails are unchanged, and in fair demand.
Wire is active and unchanged.
Window Glass prices are irregular.
Cordage has stiffened.
White Lead is in good demand; prices show some irregularity.
Linseed Oil has been marked down 5c. a gallon.
Spirits Turpentine is in light demand, at unchanged prices.

METAL MARKET.

NEW YORK, November 15, 1901.

Pig Tin.—Up to Wednesday the Pig Tin market remained uninteresting and prices unchanged. On that date, however, a sharp advance occurred, especially on spot and this month's delivery, which was followed by a further rise yesterday, bringing prices up about 1¼c. per lb. from the figures of a week ago. The sudden upward turn is said to be due to an effort to cover certain short interests in deliveries up to the 15th of the month. As stocks on the first of this month were only moderate and arrivals so far have amounted to only 435 tons, with a comparatively small amount due to arrive before December 1, a squeeze on spot was not altogether surprising. Straits Pig in small lots was advanced to 26¼c. to 26¾c. per lb. The market was steady at the close.

Charles S. Trench & Co., New York, publish the following American statistics of Pig Tin:

	Tons.
Estimated stocks on spot, New York, Philadelphia and Boston, October 1.....	1,678
Actual arrivals during October.....	2,555
	4,233
Estimated consumption during October.....	2,800
	1,433
Estimated stocks on spot, New York, Philadelphia and Boston, November 1.....	1,433
Actual afloat from East Indies, shipments to November 1.....	2,245
Actual afloat from England, shipments to November 1.....	145
Actual afloat from Continent, shipments to November 1.....	195
	4,018
Total visible supply, November 1.....	4,018
As against October 1.....	4,891
As against September 1.....	4,476
As against August 1.....	3,478
As against July 1.....	4,068

Copper.—While certain developments of the week had considerable sentimental effect on the market, there was no change as to actual business or prices. Quotations remain unchanged, and consumers continue to buy only according to their immediate requirements. Small lots of Lake Ingot are quoted at 17¼c. to 17½c.

per lb., and Casting Copper at 16¾c. to 17c. Both the United Metals Selling Company, who handle the Amalgamated product, and the American Smelting & Refining Company, have sent out a statement to their shippers notifying them that hereafter they will not settle on shipments of Copper Ore or Matte except upon the expiration of 90 days' time, and upon the prices of that date instead of the date of assay. Similar notices have been posted by other producers, but in following suit they made the time limit 60 days. This move is viewed in the trade as lack of confidence on the part of the producers in present prices. Another important feature of the market was the announcement of the reduction of the price of Copper Wire, from 18¾c. to 17c. This cut was made by the Waelark Copper Wire Company of Elizabethport, N. J., a manufacturing concern established and operated by Senator W. A. Clark, who is president and principal owner of the United Verde Copper Company of Arizona.

Sheet Copper.—There is still an active demand for Sheet Copper from all the consuming interests. Prices are firm, Sheet Copper from store being quoted on the basis of 21c. per lb.

Pig Lead.—The market for Pig Lead is unchanged in any particular. There is a fair business doing, and prices remain firm at the level prevailing for some time past. American Pig in small lots is quoted at 4.62½c. to 4¾c. per lb. St. Louis advices report no new features in that market, with a fair demand and unchanged prices.

Spelter.—The Spelter market here is very quiet. Prices are the same as those ruling a week ago. Good Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. St. Louis advices report a very satisfactory volume of sales, but without any especially large transactions, and prices ruling around the recent level, with firm tendencies.

Sheet Zinc.—The demand for Sheet Zinc is moderate and prices are without change. Jobbers quote 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7c.

Antimony.—No change has taken place in this metal. Cookson's in small parcels is quoted at 10½c. to 11c., and Hallett's at 8½c. to 9c. per lb.

Nickel.—Is unchanged, prices continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—The demand for Aluminum continues active and prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—The situation in Tin Plates is unchanged. The market is rather more quiet at present, although there is more or less business doing for deliveries covering the next four months. The American Tin Plate Company are selling only up to the end of the first quarter of this year at present prices. Deliveries from the mills are coming in to the Eastern market rather more freely, and there is a gradual softening of jobbers' prices on all lines of Plates. The small trade are buying freely in a hand to mouth way, the total of such small sales making a fairly large aggregate. Jobbers' prices are still largely nominal, varying according to supply and conditions of sale. American Bessemer Coke Plates, IC, 14 x 20, at New York or corresponding points, rule at about \$5.75 to \$6.25 per box. A further decline of 3 pence in the price of Welsh Plates was noted this week.

Sheets.—The demand for Sheets shows little or no abatement. During the past week or two the run has been heavier on Black Sheets, whereas the demand for Galvanized Sheets was before greater. There is still considerable difficulty in getting prompt delivery from the mills on certain sizes of Sheets, and jobbers find it

hard to fill all the requirements of their customers promptly. Everything in this line that comes into the market is pretty promptly taken up, and stocks in second hands do not yet begin to show any expansion. As an item of interest, and reflecting the present stringency in Sheets, we may note that a large consumer in the Pittsburgh district recently imported quite a tonnage of Sheets from Belgium. The Sheets were not quite as nice looking as the domestic product, but as far as toughness is concerned were just as good and met the requirements of the consumer. Jobbers' prices show no indication of weakening. No. 27 One Pass Cold Rolled Soft Steel Sheets are still quoted in this market at about 4.15c. for small lots and 4.05c. to 4.10c. for larger quantities, where such can be readily supplied. Galvanized Sheets rule at 65 per cent. to 67½ per cent. off the list.

Chicago advices are as follows: Mill shipments are large, yet the scarcity of months ago is not wholly relieved. However, the situation is more comfortable. While some quotations of No. 27 Common are 3.50c., store trade is quite commonly 3.60c. to 3.80c. for that size. Galvanized trade is good, with prices steady at 65 and 10 to 70.

Old Metals.—A good demand is noted for Scrap Iron, and also for some other lines of Old Metals, notably Scrap Brass and Copper. Prices are rather irregular, but they are, as a rule, quite strong. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	14¾c.
Light and Tinned Copper.....	per lb.	12¾c.
Heavy Brass.....	per lb.	9¾c.
Light Brass.....	per lb.	7¾c.
Lead.....	per lb.	4 c.
Tea Lead.....	per lb.	3½c.
Zinc.....	per lb.	2¾c.
No. 1 Pewter.....	per lb.	17½c.
No. 2 Pewter.....	per lb.	8½c.
Tin Plate Scrap, per gross ton.....		\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....		10.50 to 11.00
Heavy Cast Scrap, per gross ton.....		10.25 to 10.50
Stove Plate Scrap, per gross ton.....		7.25 to 7.50
Burnt Iron, per gross ton.....		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Trade is quite as active as furnace companies care to have it under existing circumstances. The demand is heaviest for grades which are in short supply and on which makers have their product under contract far into the future. The leading companies report their sales still running in excess of their current output. We quote: No. 1, \$16 to \$17.50; No. 2 X, \$15.15 to \$15.75; No. 2 Plain, \$14.65 to \$15; Tennessee and Alabama brands, No. 1 Foundry, \$15.50 to \$15.75; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$15.50 to \$15.75; No. 2 Soft, \$14.75 to \$15; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.50 to \$13.75.

CHICAGO.—There has been a good active week in sales of Pig Iron, the aggregate being at least from 15,000 to 20,000 tons. Half of the business was in lots running from 500 to 1000 tons, the buyers providing for their wants during the first half of 1902. The trade has been stimulated by the persistence of reports that Southern Irons were on the point of advancing, the activity being more marked in the Southern products. Some furnaces have raised prices 25c., but there has been no general advance. Foundrymen frequently have trouble in getting old orders filled, and there is a good demand for all the product of the furnaces that arrive, any temporary surplus being quickly absorbed. Local Irons are firm at unchanged prices, as follows:

Lake Superior Charcoal.....		\$17.00 to \$18.00
Local Coke Foundry, No. 1.....		15.25 to 16.00
Local Coke Foundry, No. 2.....		14.75 to 15.25
Local Coke Foundry, No. 3.....		14.25 to 14.75
Local Scotch, No. 1.....		15.25 to 16.00
Ohlo Strong Softeners, No. 1.....		17.00 to 17.50
Southern Silvery, according to Silicon.		15.65 to 16.00
Southern Coke, No. 1.....		15.15 to 15.40
Southern Coke, No. 2.....		14.40 to 14.65
Southern Coke, No. 3.....		13.90 to 14.15
Southern Coke, No. 1 Soft.....		15.15 to 15.40
Southern Coke, No. 2 Soft.....		14.40 to 14.65

PHILADELPHIA.—The demand for Pig Iron is active. Sellers have everything their own way, and it is surprising how little disposed they are to take advantage of

the present condition. Prices are very firm, probably 25c. higher for this year's shipment. A great many large buyers are making contracts for the first three or six months of 1902 at the old figure. In some grades of Iron notable advances have been made, a difference of \$2 to \$3 a ton being noticeable between this week's sales and those made during the early summer months. Foundry Irons, however, have not scored any such material gain, 75c. or possibly \$1 per ton being the limit. No. 2 X Foundry may be picked up at about \$15.25 occasionally, but \$15.50 is a more general price, some quoting \$15.75 firm. Fair prices for Philadelphia and nearby deliveries and about 25c. less for deliveries within a radius of 100 miles south or west would be: No. 1 X Foundry, \$15.75 to \$16; No. 2 X Foundry, \$15.25 to \$15.75, and No. 2 Plain, \$14.75 to \$15.

PITTSBURGH.—We note a heavy demand for Foundry iron, which is scarce for prompt delivery. Several leading manufacturers of Foundry Iron have bought heavily for delivery clear through next year on the basis of about \$15.25, Pittsburgh, for No. 2. The scarcity of Coke caused by the car shortage is still interfering with operations and some of the Valley furnaces have been banked. We quote No. 1 Foundry Iron at \$15.75 to \$16 and No. 2 Foundry at \$15.25 to \$15.50 Pittsburgh.

CINCINNATI.—While the aggregate of Pig Iron orders for the past week may hardly be as large as for the weeks preceding, yet there has been a very satisfactory trade and the favorable conditions have been fully continued. Large orders have been scarcer, but in numbers they have shown perhaps an increase. The business is remarkably well distributed, both as to class of buyers and as to territory. A large portion of the buying is for the second quarter of next year, and for any sooner delivery there is a decided scarcity of many grades. This is especially so in regard to No. 4 Foundry, which is pretty well cleaned up, and on that account is at a premium over the rest of the price-list. There is a very heavy complaint on account of the lack of cars, and both in Pig Iron and Coke circles the grievance is severe. The outlook is for a good steady market for some time yet. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to	\$14.25
Southern Coke, No. 2.....	to	13.75
Southern Coke, No. 3.....	to	13.25
Southern Coke, No. 4.....	\$12.75 to	13.00
Southern Coke, No. 1 Soft.....	to	14.25
Southern Coke, No. 2 Soft.....	to	13.75
Southern Coke, Gray Forge.....	12.75 to	13.00
Southern Coke, Mottled.....	12.75 to	13.00
Ohlo Silvery, No. 1.....	15.35 to	15.85
Ohlo Silvery, No. 2.....	14.85 to	15.35
Lake Superior Coke, No. 1.....	15.35 to	15.85
Lake Superior Coke, No. 2.....	14.85 to	15.35
Lake Superior Coke, No. 3.....	14.35 to	14.85

ST. LOUIS.—A canvass among the leading interests in the Pig Iron market reveals no change in the conditions which have been ruling of late, orders for 300 and 500 tons being about the maximum for single lots, but the aggregate tonnage of these smaller requirements keeps the order books in a most satisfactory shape. We have advanced our quotations 25c. all through the list, not in the sense of an advance by the furnaces, but as better reflecting the conditions of the market at this center. We quote as follows for cash f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.00 to \$15.25
Southern, No. 2 Foundry.....	14.25 to 14.50
Southern, No. 3 Foundry.....	13.75 to 14.00
Southern, No. 4 Foundry.....	13.25 to 13.50
No. 1 Soft.....	14.75 to 15.00
No. 2 Soft.....	14.25 to 14.75

CHICAGO REPORT.

Scrap Iron and Steel.—The demand does not show any great improvement, and prices are shaded to secure business. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	... to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	... to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	... to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.00 to 10.00

Old Gas Pipe and Boiler Tubes.....	10.50 to	11.50
Cast Borings.....	4.50 to	5.00
Turnings	9.50 to	10.00
Horseshoes .....	..... to	13.00

Old Metals.—A fair business is reported in Metals, principally in Copper and Brass. Prices are higher. Dealers quote buying prices on small lots as follows:

Copper Wire and Heavy.....	Per lb.
Copper Bottoms.....	14 $\frac{3}{4}$ c.
Copper Clips.....	13 $\frac{3}{4}$ c.
Red Brass.....	14 $\frac{3}{4}$ c.
Yellow Brass.....	13 $\frac{3}{4}$ c.
Red Brass Borings.....	9 $\frac{3}{4}$ c.
Yellow Brass Borings.....	11 $\frac{1}{2}$ c.
Light Brass.....	8 $\frac{1}{2}$ c.
Pipe Lead.....	7 $\frac{1}{2}$ c.
Tea Lead.....	4 c.
Zinc.....	3 $\frac{3}{4}$ c.
Tin Foil.....	2.80c.
Pewter, No. 1.....	20 c.
Pewter, No. 2.....	17 c.
	14 c.

Old Rubber.—A fair inquiry is reported, but prices remain unchanged. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7 $\frac{3}{4}$ c.
Rubber Car Springs.....	.....	5 $\frac{1}{2}$ c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7 $\frac{1}{4}$ c.
Black Rubber.....	.....	4 $\frac{1}{4}$ c.
White Rubber.....	.....	8 $\frac{1}{2}$ c.

Rags.—Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lbs. in any quantity.

Anthracite Coal.—A heavy demand is reported, and continued complaint is heard on account of the shortage of cars at the mines. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

The continued strength of the iron market is the most important feature of the present condition and has an obvious bearing on the situation in hardware and related lines. A tone of firmness is thus given to values through the general lines of manufactured products, and especially those in which the raw material is a large part of the cost. Accompanying this firmness in iron and steel is the heavy demand for the cruder products and the good demand for hardware and related lines. At this season orders are for the most part either for, on the one hand, winter and holiday goods and such as are required to complete stocks, or, on the other hand, for next season's delivery, a department of buying which is receiving much attention from the trade. In filling up stocks for winter sale there are many urgent calls upon both manufacturers and jobbers, and in some kinds of goods there is a decided scarcity. Holiday business promises to be of excellent volume, and merchants are preparing to cultivate this class of trade with more enterprise and liberality than usual with a view to making the most of the opportunities which the season presents.

Manufacturers are watching the market closely in view of the condition of the iron market and are careful not to load up with too many orders. There is also more care on their part than usual in regard to terms and conditions, and they are generally taking a more independent position, refusing to guarantee prices, to accept unspecified orders, and in other ways to favor buyers unreasonably. There is little new in the way of reductions or advances. The market as a whole is steady and pretty evenly maintained. Some lines, the prices of which have been recently broken, are getting into a more settled condition on the new basis. The trade generally feel that they are safe in buying according to their requirements, and in lines which are not regarded as under special suspicion on account of indications of weakness or probability of early decline the trade are purchasing with confidence and in good volume.

NOTES ON PRICES.

Plumbers' Supplies.—An excellent demand continues for Plumbers' and Steam Fitters' Supplies in this section. There is an immense amount of both new and repair work being done in New York and vicinity, which calls for a large amount of supplies of all kinds, and jobbers are kept pretty busy meeting the calls of the trade. Prices show no sign of weakening in any direction, and it is not thought that there will be a break in any line of goods this side of 1902. Supplies of such goods as were scarce a short time ago are now more liberal, and the inconvenience and delays lately experienced by reason of the scarcity are now but little felt.

Wrought Iron Pipe.—Supplies of Wrought Iron Pipe in this market are better and, notwithstanding the heavy existing demand, the trade now have little difficulty in procuring all the Pipe needed. Prices continue very firm, with no prospect of a decline for some time to come.

Plumbers' Marble.—A slight advance was made this week in the price of Plumbers' Marble. The demand for this material has been unusually heavy and the Marble men have difficulty in meeting the requirements of the trade.

Wire Nails.—The movement in Wire Nails continues in large volume. While a careful and conservative policy is pursued by buyers in not purchasing beyond their requirements, the current demand is such as to take up readily the output of the mills and the total amount of business is very satisfactory. Owing to pressure of competition prices are not entirely uniform all over the country, although the leading interests are holding theirs firmly. Small lots at store in New York are quoted at \$2.40 to \$2.45 per keg.

Cut Nails.—The market for Cut Nails remains unchanged. There is a very large demand and a better assortment is obtainable as the supply of Steel is better. Small lots from store, New York, are quoted at \$2.18 to \$2.30 per keg.

Wire.—The demand for Plain Wire continues in good volume and the mills are busy, with the likelihood of having steady work through the winter. Prices are unchanged, small lots of Plain Wire being quoted at 2.60 cents and Galvanized at 3 cents.

Window Glass.—Owing to the agreement between the combined domestic Glass manufacturers and the jobbers' association, former quotations are merely nominal, jobbers being permitted to sell at prices which will meet the competition of foreign Glass. The price of Glass from time to time, therefore, will depend on the price at which the outside Glass can be furnished.

White Lead.—Out of town orders for White Lead in Oil are of satisfactory volume, as the fine weather, which has been a feature of the past few weeks, has given an opportunity of finishing up outside work. Some irregularity in price continues. Concessions from regular quotations are reported of $\frac{1}{4}$ to $\frac{1}{2}$ cent, according to brands. Quotations in this market are unchanged at 7 to 7 $\frac{1}{4}$ cents per pound for small lots of White Lead in Oil.

Linseed Oil.—The Linseed Oil market continues in an unsatisfactory condition, there being a wide variation in quotations. On Wednesday the leading producers announced a cut of 5 cents per gallon, due, it was said, to the arrival of Seed. It is asserted by authorities in the trade that this year's crop of Flaxseed will be the largest on record. Raw Oil is quoted at about 60 to 62 cents per gallon for small lots. Boiled Oil is 2 cents advance on Raw.

Spirits Turpentine.—The demand for Turpentine during the week has been light. Large consumers have apparently kept out of the market because they were unwilling to pay current prices. Stocks are said to be amply sufficient for present needs. Retail quotations are 38 to 39 cents per gallon.

THE AMERICAN DISTRIBUTING COMPANY, Syracuse, N. Y., are sending to the trade a four-page circular devoted to their Gasoline and Alcohol Torches. These are

made in a variety of styles for plumbers' use, as well as for gas fitters and painters. The circular gives the list prices as well as illustrations of the line of goods made, and of the various parts that may be needed for repairs. The company also make Brass Ferrules of all sizes, and are prepared to make Brass Castings for their customers.

A New Aluminum Alloy.

Prof. R. C. Carpenter of Cornell University has patented a new aluminum alloy which is claimed to resist expansion, to be hard and of great tensile and compressive strength, while it may be melted at a low temperature and runs with great solidity, making a sharp casting, with relatively small contraction. The ingredients of the alloy are described in the specification as follows: Aluminum, 25 parts; zinc, 25 parts; tin, 25 parts. In preparing the alloy Professor Carpenter states that it is best to first melt the aluminum and then the tin gradually in small pieces and afterward the zinc. The low temperature at which the alloy of aluminum and tin melts permits the addition of the zinc without danger of oxidation or burning. The alloy in the proportions given has a specific gravity of 3.2 to 3.3, a tensile strength of 29,000 pounds per square inch and contracts 8 per cent. in solidifying.

In connection with the subject of the employment of convict labor, it is interesting to note that the books of the Convict Bureau of the State of Alabama show that during the last fiscal year the State secured a profit on convict labor of \$92,832. The convicts in Alabama are hired in the mines, in the saw mills, to the farmers and to the cotton factories, while some are employed on the State farm. The mines pay \$14 per month to convicts, the saw mills \$12, while the farmers pay \$6 a month for the convicts that they employ. It will thus be seen that Alabama manages to make a profit out of her State prisoners, whereas they are a source of heavy expense for maintenance in nearly every other State.

Dr. Hubert Jansen, Berlin (N. W. 7), Dorotheen Strasse, 49, Germany, who is a well-known lexicographer, has been employed as the editor of the "Techno Lexicon," a technical dictionary, in German, English and French, which will be published by the Verein Deutsche Ingenieure. Dr. Jansen is very anxious to receive from American manufacturers copies of their catalogues, price-lists, &c., for the purpose of securing information which he needs in the preparation of this work to enable him to properly set forth the facts required for the English or American department. Quite a number of American firms have already placed their publications at his disposal, but he wishes to secure as full a representation of American industrial matters as possible. The dictionary will be published in three volumes, Vol. I being German-English-French, Vol. II, English-German-French, and Vol. III French-German-English.

A writer in the Gas City, Kan., *Headlight* is authority for the following figures on the amount of work done by a single metal drawer employed in a zinc rolling mill: He makes 95 plates of zinc each shift, or 2950 per month, or 35,200 per year. Each plate averages 62 pounds, making 3790 pounds each shift, or 716,700 pounds per month, or 2,120,400 pounds per year, which would load 70 cars of 30,900 pounds each and make two train loads of 35 cars each. The zinc is shipped of St. Louis and sold at 4 cents a pound, making a total of \$84,816 per year at present prices. These figures are given by a man who is said to have drawn metal for years.

The October fire loss of the United States and Canada, as compiled by the New York *Journal of Commerce*, amounted to \$14,749,000. This is nearly double the aggregate losses of September and more than double the record charged against October of last year. The fire insurance

companies in general are said to have lost a great deal of money this year and an advance in rates is likely to be made. The country's total fire loss for the ten months ending October 31 has reached the sum of \$135,404,000, an average of over \$13,500,000 a month.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED NOVEMBER 15, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.	
Small lots.....	37¢
100-lb lots.....	35¢
Aluminum Sheet, B. & S. gauge, in lots of 50 lbs or more.	
Wider than.....	6-in. 14-in. 24-in.
And including.....	14-in 24-in. 30-in.
Nos. 13 to 19.....	\$0.42 \$0.44 \$0.47
" 20.....	.44 .46 .49
" 21 to 23.....	.46 .48 .51
" 24.....	.48 .50 .53
" 25.....	.47 .51 .54
" 26.....	.47 .54 .59
" 27.....	.48 .57 .62
" 28.....	.48 .57 .64
" 29.....	.40 .60 .60
" 30.....	.50 .64 .77

Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—
Cookson..... 10¢@11¢
Hallett's..... 8¢@9¢
U.S..... 8¢@9¢

Brass, Roll and Sheet..15¢@20¢

Conductors—

Corrugated.	
Round or Square.—	
Galvanized ½ or more, N'st'd.....	70¢@75¢
Not Nested.....	70¢@75¢
Plain Round, ½ or more.....	70¢@75¢
Nested.....	70¢@75¢
Galvanized, Plain Round, Not Nested.....	70¢@75¢

Spiral Riveted.
Galvanized..... 40¢
See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor.

Conductor Strainers—

See Strainers, Conductor.

Copper—

Lake Ingot.....	17¼¢@17½¢
Casting.....	16¼¢@17¢
Sheet and Bolt.....	21¢ per lb basis
Cold Rolled Sheets.....	22¢ per lb basis
Cold Rolled and Polished Sheets.....	23¢ basis
Planished Sheets.....	24¢ basis
Bottoms, Pits and Flats.....	25¢ basis

Eave Trough, Galvanized

Territory.....	L. C. L.
Eastern.....	75¢@10¢
Central.....	75¢@10¢
Southern.....	75¢@10¢
S. Western.....	75¢@10¢
Terms, 2% for cash.	

Eave Trough Mitres—

Lap or Slip Joluit..... 11st, 25¢

Elbows—Plain Adjustable—

Eastern List..... 30¢

Galvanized..... 30¢

Perfect Elbows..... 40¢

Stove Pipe—

Four-Piece.....

No. 1.....	40¢
No. 2.....	45¢
No. 3.....	50¢

Galvanized..... 60¢

Elbows and Shoes—

See Petroleum Products.

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R., R. G.	
Soft Steel, Cleaned.	
Nos. 14 to 16.....	3.85¢
Nos. 18 to 21.....	3.95¢
Nos. 22 to 24.....	4.05¢
Nos. 25 and 26.....	4.15¢
No. 27.....	4.25¢
No. 28.....	4.35¢

Russia, Planished, &c.

Genuine Russia, accord..... 11¢@13¢

Do, Stained..... 6¢@10¢

Patent Planished, 11¢ A, 12¢ B, 11¢ net

Galvanized.

Nos. 10 to 16.....	12¢
Nos. 17 to 21.....	13¢
Nos. 22 to 24.....	14¢
Nos. 25 to 26.....	15¢
No. 27.....	16¢
No. 28.....	17¢
No. 29.....	18¢
No. 30.....	19¢

36 in. 1¢ per lb higher.

Lead—

American Pig.....	4.62¢@4.75¢
Pipe.....	5½¢@5¼¢
Tin Lined Pipe.....	12¼¢@12½¢
Block Tin Pipe.....	37¢@38¢
Sheet Lead, full rolls.....	7¼¢@7½¢
Sheet Lead, cut.....	7¼¢@7½¢
Old Lead in exchange, 4¢ per lb.	

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb..... 60¢@65¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.....	@ 6½¢
Lots less than 500 lb.....	@ 7¢
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ ½¢
Lead, White, in oil, 12½ lb tin	
pails, add to keg price.....	@ 1¢
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	@ 1½¢
Lead, White, Dry in bbls.....	5¼¢@6¢
Lead, Red, bbls, ½ bbls. and kegs;	
Lots 500 lb or over.....	@ 6¢
Lots less than 500 lb.....	@ 6½¢

Oils—

Linseed, City, raw.....	60¢@62¢
Linseed, City, boiled.....	62¢@64¢
Linseed, State and West'n, raw.....	60¢@62¢

Spirits Turpentine—

In Southern bbls.....	37¼¢@38¢
In machine bbls.....	38¼¢@39¢

Putty—

In bulk.....	\$1.25
In bladders.....	2.25
In cans 12 lb to 25 lb.....	2.25
In cans 1 lb to 5 lb.....	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....	12¼¢@13¢
Kerosene.....	13¢@13½¢

Pipe, Drain—

See Conductors.

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.	
Black Japanned.....	60¢@10¢@10¢@5¢
White Japanned.....	60¢@10¢@10¢@5¢
Nickel Plated.....	60¢@10¢@10¢@5¢
Bronze Finishes in Imitation of Gold,	
Silver, Copper or Bronze.....	60¢@10¢@10¢@5¢
Electroplated in Brass, Bronze or	
Copper.....	60¢@10¢@10¢@5¢
White Porcelain.....	60¢
Solid Brass and Bronze Metal.....	50¢

Roofing Material—

1 Ply Tarred Paper, 108 sq. ft.	\$26.00@28.00
2 Ply Tarred Paper.....	108 sq. ft.
3 Ply Tarred Paper.....	108 sq. ft.
Slater's Felt.....	roll 500 sq. ft., 50¢@60¢
Roofing Pitch.....	bbl. \$2.38

Rosin—

Common and Good—Strained.	
Rosin, C. & D.....	1.45¢@1.50¢
Rosin, E. & F.....	1.55¢@1.65¢
Rosin, G. & H.....	1.70¢@1.75¢
Rosin, I. & K.....	1.80¢@1.85¢
Rosin, M. & N.....	2.85¢@3.45¢

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

Pennsylvania:	According to size.
Best Bangor, 1/2 sqr.....	\$3.25@3.50
No. 1 Bangor Ribbon, 1/2 sqr.....	3.00@3.50
Pen Argyle, 1/2 sqr.....	3.00@3.75
Peach Bottom, 1/2 sqr.....	4.85@5.60
No. 1 Boys, 1/2 sqr.....	3.35@3.55
No. 1 Chapman Keystone, 1/2 sqr.....	3.25@4.25
Vermont:	
Sea Green, 1/2 sqr.....	\$2.00@3.15
Purple, 1/2 sqr.....	3.75@4.25
Unfading Green, 1/2 sqr.....	3.25@4.50
Red, 1/2 sqr.....	6.50@11.00

Solder—

1/2 lb guaranteed.....	17¢@17½¢
No. 1.....	14¢@15½¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound. Smaller Barrels Quintiles

Concentrated Flux.....	4c
Eureka Flux.....	3c
Triple Strength.....	4½c
Extra Concentrated.....	4c
Crystal.....	7c
Gedney's Fluid.....	2c
Lennox Fluid.....	2c
Perfection Flux.....	3c
Yager's Salts, 1 lb. bottles.....	50¢
5 lb. bottles, per lb.....	45¢

Soldering Coppers—

Per lb..... 22¢@24¢

Spelter—

Western Spelter..... 4½¢@4.60¢

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized..... 50¢

Tin Pigs and Bars—

Banca, pigs, 10 lb.....	25¢@26¢
Straits, pigs, 10 lb.....	25¢@26¢
Straits, in bars, 10 lb.....	26¢@27¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Galvanized Grade:	
IC, 14 x 20.....	\$7.50
IX, 14 x 20.....	9.00
IXX, 14 x 20.....	10.25
IXXX, 14 x 20.....	11.50
IXXXX, 14 x 20.....	12.75

Melyn Grade:

IC, 14 x 20.....	7.00
IX, 14 x 20.....	8.50
IXX, 14 x 20.....	9.75
IXXX, 14 x 20.....	11.00
IXXXX, 14 x 20.....	12.25

Allaway Grade:

IC, 14 x 20.....	6.50
IX, 14 x 20.....	7.60
IXX, 14 x 20.....	8.70
IXXX, 14 x 20.....	9.80
IXXXX, 14 x 20.....	10.00

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight

IC, 14 x 20.....	\$6.00@6.50
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N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
90 lb.....	20¢
85 lb.....	25¢
80 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.....	\$17.50@18.00
About 30 lb coating.....	16.75@17.25
About 20 lb coating.....	14.75@15.25
About 15 lb coating.....	12.75@13.25
About 8 lb coating.....	11.50

Boiler Plates, American—

1XX, 14 x 26..... (112 sheets)	\$13.00
1XX, 14 x 28..... (112 sheets)	14.00
1XX, 14 x 31..... (112 sheets)	15.50

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz..... \$15.00

Steel Lock Frame, per doz..... 18.00

Daisy Improved pattern, 1/2 doz..... 18.00

Tubes and Tubing—

Braze 1 Brass, List Feb. 26, 1896, 30¢@35¢

Copper and Bronze, 3¢ per lb. list mo. e

thau Brass, Seamless Brass Tubes, net list Feb. 6, 1890.

Tin..... 50¢

Galvanized..... 50¢

Fittings for do..... 40¢

Zinc—

600 lb casks 1/2 lb..... 64¢

Per lb..... 7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.....	65¢@10¢@70¢
35 and 40 gal.....	65¢@65¢@10¢
Other sizes up to 52 gal.....	60¢@60¢@10¢
52 gal. and above.....	60¢@60¢@5¢
Extra Heavy Boilers:	
18 to 52 gal.....	50¢@10¢@80¢
53 gal. and above.....	50¢@55¢

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:

Basin Cocks..... 65¢@65¢@5¢

Bath Cocks and Double Bath Cocks..... 65¢@70¢

Bibs..... 65¢@65¢@5¢

Ribs, Flanged..... 65¢@70¢

Fuller:

Bibs..... 70¢@70¢@10¢

Basin Cocks Nos. 1 to 4..... 70¢@10¢@75¢

Bath Cocks, No. 4½..... \$2.00 net

Ground Key Work:

Finished Bibs..... 60¢@65¢

Rough Bibs and Stops..... 65¢@70¢

Rough Stop and Stop and Waste

Cocks..... 70¢@70¢@5¢

Rough Stop and Stop and Waste

Cocks, Patented..... 65¢@65¢@5¢

Miscellaneous—

Basin Clamps..... 60¢@65¢

Basin Plugs..... 60¢@65¢

Chain Stays..... 60¢@65¢@70¢

Iron Boiler Couplings.....

Lead Pipe, Iron Pipe.

Plain Face, 1/2 set \$0.95 \$1.05

Ground Face per set \$1.00 \$1.10

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air..... 75¢@75¢@5¢

Gas Meter and Union Meter..... 65¢@70¢

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Ohio Mica Co., Canton, Ohio.
Palermo Mica Co., 115 Beekman St., N. Y.

Milk Cans.

National Enamelling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. (See Stoves and Ranges, Oil, Vapor and Gasoline.)

Ovens, Portable.

Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Paint.

Connors, Wm. Paint Mfg. Co., Troy, N. Y.

Painting Machine.

Ripley Hdw. Co., Grafton, Ill.

Patent Solicitors.

Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.

Cope, Geo. W., Detroit, Mich.
Gobelle Pattern Co., Cleveland, Ohio.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.

Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.

Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Couplers.

Stevens, J. & E. Co., Cromwell, Ct.

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Vanderman Plumbing & Heating Co., Willimantic, Conn.

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Huenefeld, F. H., Cincinnati, O.
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Koven, L. O. & Bro., 50 Cliff St., N. Y.

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Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

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Shepard, Sidney & Co., Buffalo, N. Y.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.

Roofing Cement and Paint.

Callahan, Geo. & Co., 213 Front Street, N. Y.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
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Stowell Mfg. Co., Jersey City, N. J.

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Galt, John & Sons, 253 Broadway, N. Y.
G. H. Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

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 Follansbee Bros. Co., Pittsburgh, Pa.
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 Osborn, J. M. & L. A., Cleveland, O.
 Taylor, N. & G. Co., Philadelphia, Pa.
 Wood Co., Alan Philadelphia, Pa.
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 Cincinnati Stamping Co., Cincinnati, O.
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 Meurer Bros. Co., Brooklyn, N. Y.
 Montross Metal Shingle Co., Camden, N. J.
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 Canton Steel Roofing Co., Canton, O.
 Drouve, G. Co., Bridgeport, Conn.
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 Galt, Jno. & Sons, 253 Broadway, N. Y.
 Salem Nail Co., 279 Pearl St., N. Y.
- Smoke Test Machine.**
 Gunster & Forsyth, Scranton, Pa.
- Snow Guards.**
 Clason Arch. Metal Works, Providence, R. I.
- Solder.**
 Bruce & Cook, 186 to 190 Water St., N. Y.
 Follansbee Bros. Co., Pittsburgh, Pa.
 Gummey, McFarland & Co., Phila., Pa.
 McClure & Co., Pittsburgh, Pa.
 Meurer Bros. Co., Brooklyn, N. Y.
 Sanborn, J., 217 Water St., N. Y.
 Taylor, N. & G. Co., Philadelphia, Pa.
- Soldering Furnaces.**
 Burgess Soldering Furnace Co., Columbus, Ohio.
- Speaking Tubes and Whistles.**
 Ostrander, W. R. & Co., 204 Fulton St., N. Y.
- Specialties, Sheet Metal.**
 Vogel, Wm. & Bros., Brooklyn, N. Y.
- Steam and Gas Fitters' Supplies.**
 Curtis & Curtis Co., Bridgeport, Conn.
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- Stove Bands.**
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 Hoffman, Geo. W., Indianapolis, Ind.
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 Cope, G. W., Detroit, Mich.
 Gobeille Pattern Co., Cleveland, O.
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 Vedder Pattern Works, Troy, N. Y.
- Stove Pipe Thimbles.**
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 Hessler, H. E. Co., Syracuse, N. Y.
 Howes, S. M. Co., Boston, Mass.
 Kramer Bros., Dayton, O.
 Magoon, A. J. & Son, Providence, R. I.
 Marcy Stove Repair Co., 74 Beekman St., N. Y.
 Troy Nickel Works, Troy, N. Y.
 Union Stove Repair Co., Chicago, Ill.
- Stove Trimmings, &c.**
 Fanner Mfg. Co., Cleveland, O.
 Greene, W. F., Est. of, Troy, N. Y.
 Troy Nickel Works, Troy, N. Y.
- Stove Trucks.**
 Hessler, H. E. Co., Syracuse, N. Y.
 Howes, S. M. Co., Boston, Mass.
 Tucker & Dorsey, Mfg. Co., Indianapolis, Ind.
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 Barstow Stove Co., Providence, R. I.
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- Bergstrom Bros. & Co., Neenah, Wis.**
 Bibb, B. C. Stove Co., Baltimore, Md.
 Boynton Furnace Co., 207 Water St., N. Y.
 Brand Stove Co., Milwaukee, Wis.
 Clad, V. & Sons, Philadelphia, Pa.
 Detroit Stove Works, Detroit, Mich.
 Dighton Furnace Co., Taunton, Mass.
 Eclipse Stove Co., Mansfield, O.
 Enterprise Stove Co., Vincennes, Ind.
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 Fuller & Warren Co., Troy, N. Y.
 Graff Furnace Co., 203 Water Street, New York.
 Gurney & Co., Boston, Mass.
 Magee Furnace Co., Boston, Mass.
 Michigan Stove Co., Chicago, Ill.
 Pittsburgh Stove & Range Co., Pittsburgh, Pa.
 Portsmouth Stove & Range Co., Portsmouth, O.
 Quinoy Fdry. & Novelty Co., Quinoy, Ill.
 Richmond Stove Co., Norwich, Conn.
 Ringen Stove Co., St. Louis, Mo.
 Schneider & Trenkamp Co., Cleveland, O.
 Sheppard, Isaac A. & Co., Phila., Pa.
 Smith & Anthony Co., Boston, Mass.
 Stamford Foundry Co., Stamford, Ct.
 Van, John, Range Co., Cincinnati, O.
 Victor Stove Co., Salem, O.
 Walker & Pratt Mfg. Co., Boston, Mass.
 Weir Stove Co., Taunton, Mass.
- Stoves and Ranges, Gas.**
 Adler H. Co., Pittsburgh, Pa.
 Detroit Stove Works, Detroit, Mich.
 Dighton Furnace Co., Taunton, Mass.
 Economy Stove & Mfg. Co., Detroit, Mich.
 Ringen Stove Co., St. Louis, Mo.
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 Ringen Stove Co., St. Louis, Mo.
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- Street Lamps, Gasoline.**
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- Tank Heaters.**
 American Radiator Co., Chicago, Ill.
- Tanks, Steel and Wood.**
 Edwards, J. H., 59 Park Place, N. Y.
- Terne Plates.**
 American Tin Plate Co., New York.
- Tinners' Tools, Machines and Supplies.**
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 Berger Bros. Co., Phila., Pa.
 Bertsch & Co., Cambridge City, Ind.
 Bilss, E. W. Co., Brooklyn, N. Y.
 Bruce & Cook, 186 to 190 Water St., New York.
 Follansbee Bros. Co., Pittsburgh, Pa.
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 Niagara Machine & Tool Wks., Buffalo, N. Y.
 Ohl, Geo. A. & Co., Newark, N. J.
 Peck, Stow & Wilcox Co., 27 Murray St., New York.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Weiss, H. & Co., 20 Cliff St., N. Y.
- Tinners' Trimmings.**
 Vogel, Wm. & Bros., Brooklyn, N. Y.
- Tin Plate.**
 American Tin Plate Co., New York.
 Berger, L. D., Philadelphia, Pa.
 Bruce & Cook, 186 to 190 Water St., New York.
 Follansbee Bros. Co., Pittsburgh, Pa.
 Gummey, McFarland & Co., Phila., Pa.
 McClure & Co., Pittsburgh, Pa.
 Meurer Bros. Co., Brooklyn, N. Y.
 Osborn, J. M. & L. A., Cleveland, Ohio.
 Taylor, N. & G. Co., Philadelphia, Pa.
- Tin Scrap.**
 Vulcan Metal Refining Co., 157 Cedar St., N. Y.
 Vulcan Western Co., Streator, Ill.
- Tinware.**
 Shepard, Sidney & Co., Buffalo, N. Y.
- Tools and Machines, Steam and Gas Fitters'.**
 Curtis & Curtis Co., Bridgeport, Conn.
 Saunders, D. Sons, Yonkers, N. Y.
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 American Distributing Co., Syracuse, N. Y.
 Clayton & Lambert Mfg. Co., Detroit, Mich.
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 Crosby Steam Gage & Valve Co., Boston, Mass.
 Jenkins Bros., 71 John St., New York.
 Morgan & Co., Chicago.
- Ventilators and Chimney Caps.**
 Berger Bros. Co., Phila., Pa.
 Dowman Mfg. Co., Atlanta, Ga.
 Fenn, Geo. E., Boston, Mass.
 Globe Ventilator Co., Troy, N. Y.
 Kramer Bros., Dayton, O.
 Meurer Bros. Co., Brooklyn, N. Y.
 Rosen, D. J., 499 Canal St., N. Y.
 Washburne, E. G. & Co., 46 Cortlandt St., New York.
- Washers, Valves, &c.**
 Littleford Bros., Cincinnati, O.
 Marston, I. G. & Co., Boston, Mass.
- Washing Machines.**
 Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.
- Water Coolers.**
 National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Water Closets.**
 Colwell Lead Co., 63 Centre St., N. Y.
 Zero Valve & Brass Mfg. Co., Buffalo, N. Y.
- Water Fronts.**
 Clark, Henry N. Co., Boston, Mass.
 Donaldson, O. G. & D. H., Buffalo, N. Y.
- Water Heaters.**
 Adam, W. J., Joliet, Ill.
 Kemp, C. M. Mfg. Co., Baltimore, Md.
- Whitewashing Machine.**
 Ripple Hardware Co., Grafton, Ill.
- Wind Gates.**
 Miner & Peck Mfg. Co., New Haven, Conn.

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THE METAL WORKER.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

Wanted, four **TINNERS**; steady work for good men; good wages; write at once. Slaughter & Addison, Jacksonville, Fla. Nov. 16

At once, a **TINSMITH** and **METAL WORKER**; must be competent and reliable; one understanding steam work and plumbing will be preferred; a steady job to right man. Smith Brothers, Leominster, Mass. Nov. 16

At once, a **STEAM MAN** and **PLUMBER**; must be competent and reliable; one understanding sheet metal work will be preferred; a steady job to right man. Smith Bros., Leominster, Mass. Nov. 16

A first-class **PLUMBER**; must be strictly sober; permanent position. Dornblatt Plumbing Company, Athens, Ga. Nov. 16

A first-class **WORKING FOREMAN**, competent to manage help, who has had experience in the manufacture of tin cans and tinware, and who thoroughly understands the handling of stamping presses and toggle drawing presses and setting of dies; also a first-class man who is proficient in designing stencil cutting and decorating. Iowa Can Company, Des Moines, Iowa. Nov. 16

GENERAL FOREMAN for a foundry manufacturing stove and range and light gray iron castings; one who has had general foundry practice and is competent to take charge of a modern plant in Western Pennsylvania and handle help to the best advantage; advise age, salary and experience, giving reference. "Castings," care *The Metal Worker*, New York. Nov. 16

Good, steady, **A1 PLUMBERS**; will pay \$4 per day with nine hours; I want first-class men that understand their business and are rapid with their work; good men can have steady employment; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Nov. 16

A first-class **TINSMITH**; steady job to the right man. John S. Pike, North Troy, Vt. Nov. 16

For country, good all around man, single preferred. Green Bros., Goldens Bridge, N. Y. Nov. 16

METAL PATTERN MAKER who has experience in molding lathe work and making master patterns; a general all around man wanted; steady work for the right party. Address, with reference, to 219-221 West Second street, Cincinnati, Ohio. Nov. 16

By a wholesale tin plate firm, man to act as **CORRESPONDENT**; one familiar with following up new trade desired; state references and salary expected. "Correspondent," care *The Metal Worker*, New York. Nov. 16

By wholesale tin plate and metal house, active and energetic **SALESMAN**, familiar with trade in New England States; also one familiar with Greater New York and vicinity. Address, with references, stating experience, "Tin Plate," care *The Metal Worker*, New York. Nov. 16

SALESMAN (traveling) visiting hardware and sheet metal trade, to handle a very salable article as slide line; liberal arrangements will be made with the right party. D. J. Rosen, 439 Canal street, New York. Nov. 16

STOVE FOUNDRY FOREMAN; must be **A1** man; location near Chicago. Box 167, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 16

A **SALESMAN** visiting the hardware trade who can carry a first-class line of warm air registers to advantage. "D. R.," care *The Metal Worker*, New York. Nov. 16

Good **SALESMEN**; men who can obtain orders for hot water and stove heaters and hot air furnaces. Correspond with "H. K.," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 16

A country **TINNER**; one that has some knowledge of plumbing and steam heating; steady job to the right man; answer with reference and wages wanted. Wm. C. Cook, Branchville, N. J. Nov. 16

One first-class **TINNER** and **SLATER**; steady work; must be sober and reliable. J. E. Myers, Penna Station, Pa. Nov. 16

GALVANIZED IRON WORKER, experienced in estimating and jobbing work, to go to Mexico. Carr Brothers, 61 Broadway, New York. Nov. 9

At once, a **WORKING FOREMAN** in cornice department; must be a hustler and capable of turning out first-class work; one who understands drafting, raising circle work, &c.; state wages. N. E. Steel Roofing Company, Worcester, Mass. Nov. 9

JOBGING TINSMITH who has had experience in New York or Brooklyn; a yearly job to right man; young man preferred. "F. J. T.," care *The Metal Worker*, New York. Nov. 9

TINNER; one who can do all kinds of tin and metal work, repair bicycles and gasoline stoves, and all kinds of repainting that come in country tin shop; also can figure on plans. John Stoelzie & Bro., Carbondale, Ill. Nov. 9

Good **CORNICE** and **SKYLIGHT MAKERS**; also good **TINSMITHS** for bench work and furnace work. Falstum & Tornquist Company, Monroe, cor. Elm street, Passaic, N. J. Nov. 9

MANAGER for tin plate sales department; must be a good correspondent and thoroughly versed in all grades of tin plate; long experience in the marketing of high grade plates very essential; state fully past experience and salary expected. Box 472, Canton, Ohio. Nov. 9

An experienced **FOUNDRY FOREMAN** for a radiator works; one who can take entire charge from the core room; good pay to right party. "X. Z.," care *The Metal Worker*, New York. Nov. 9

SALESMAN of unexceptional ability to take charge of Boston office and cover adjacent New England territory, representing a line of cast iron, steam and water house heating boilers of highest reputation and having an established trade. Address, with references, "M. B. H.," care *The Metal Worker*, New York. Nov. 2

SITUATIONS WANTED.

BOOKKEEPER; aged 30; single; thoroughly experienced in manufacturing line; up to date methods; all around man; capable of taking charge of office; exceptional references; salary required, \$20 per week. "Bookkeeper," care *The Metal Worker*, New York. Nov. 16

As **TRAVELING SALESMAN** for a first-class plumbing or stove and heater company; have been in business 25 years and can furnish references. F. B. Smith, Mystic, Conn. Nov. 16

By a young man who has had six years' experience in the retail stove business; desires position with good wholesale house; can furnish very best of references. "W. S. W.," care Kearney, 161 Bridge street, Brooklyn, N. Y. Nov. 16

Engagement for 1902 by a **SALESMAN** of experience and large acquaintance in the Western States with a first-class stove and range manufacturing company or tin, pressed and enameled ware manufacturing company; Chicago and St. Louis references. "G.," care *The Metal Worker*, New York. Nov. 16

By young man with about six years' experience at plumbing and jobbing; strictly temperate and industrious; would like position in good shop where there are prospects for the future; 26 years old; willing to go anywhere. "W. H. C.," care *The Metal Worker*, New York. Nov. 16

By a first-class **PLUMBER**; will work anywhere; wages reasonable; 17 years' experience. Address Joseph Reilly, 250 Brook avenue, New York. Nov. 16

As **BENCH WORKER** or **FOREMAN** in cornice or jobbing shop, by a good cutter. "Klein," 403 East Eleventh street, New York. Nov. 16

A practical man of long experience who understands the business in every detail wishes position as **FOREMAN** or **CUTTER** in cornice and skylight shop, or is willing to work at the bench. "Cornice," 765 De Kalb avenue, Brooklyn, N. Y. Nov. 16

By **A1**, first-class **IRON STOVE PATTERN FITTER** and **STOVE METAL PATTERN MAKER**; steady position; years of experience; **A1** reference. Thos. Woolson, 447 Masten street, Buffalo, N. Y. Nov. 16

Would like a situation to complete my trade as a plumber; have had two years' experience; am sober and steady; age 21. E. W. Johnson, P. O. Box 356, Haverstraw, N. Y. Nov. 16

By a young, single, sober and steady **TIN** and **SHEET IRON WORKER**; roofing gutters and spouting, steam heating and furnace, pump, wind mill and iron pipe work; nine years' experience; \$11 per week for steady work year around; references if necessary. "G. T.," Rockville, Conn. Nov. 16

Plain and ornamental **JAPANNER**; an all around good man, desires position as foreman; can give first-class reference. Address J. H. Walker, 334 West Fourth street, Cincinnati, Ohio. Nov. 16

By up to date **STEEL RANGE WORKING FOREMAN**; can educate help, lay out work from start to finish; 20 years' steady experience on steel cooking apparatus; age 33; married; reliable. "W. R. B.," 1 Church street, Detroit, Mich. Nov. 16

A **PATTERN FILER** wants a job; is sober and industrious. "J. M. D.," 42 Bradford street, Auburn, N. Y. Nov. 16

By **FOREMAN** in a stove pattern shop; first-class draftsman and pattern maker, fair carver and designer; 12 years with present firm; would like a change. "H. B.," care *The Metal Worker*, New York. Nov. 16

Practical **STOVE FOUNDRYMAN** with 20 years' experience as the practical man of large stove plants desires to make a change January 1; is able to handle large stove plants, 100 molders or more; am willing to let my ability tell my worth. "Practical Foundry," care *The Metal Worker*, New York. Nov. 16

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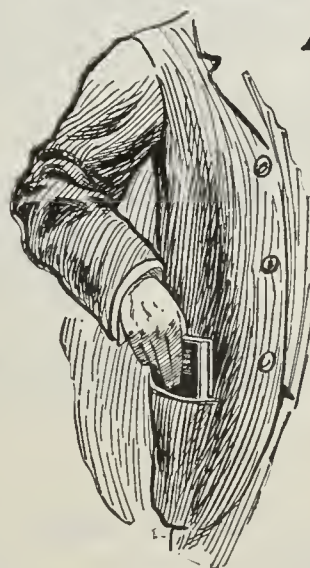
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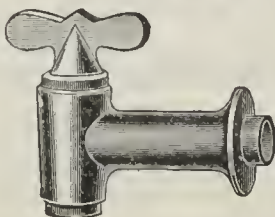


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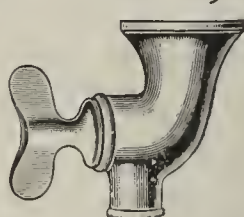
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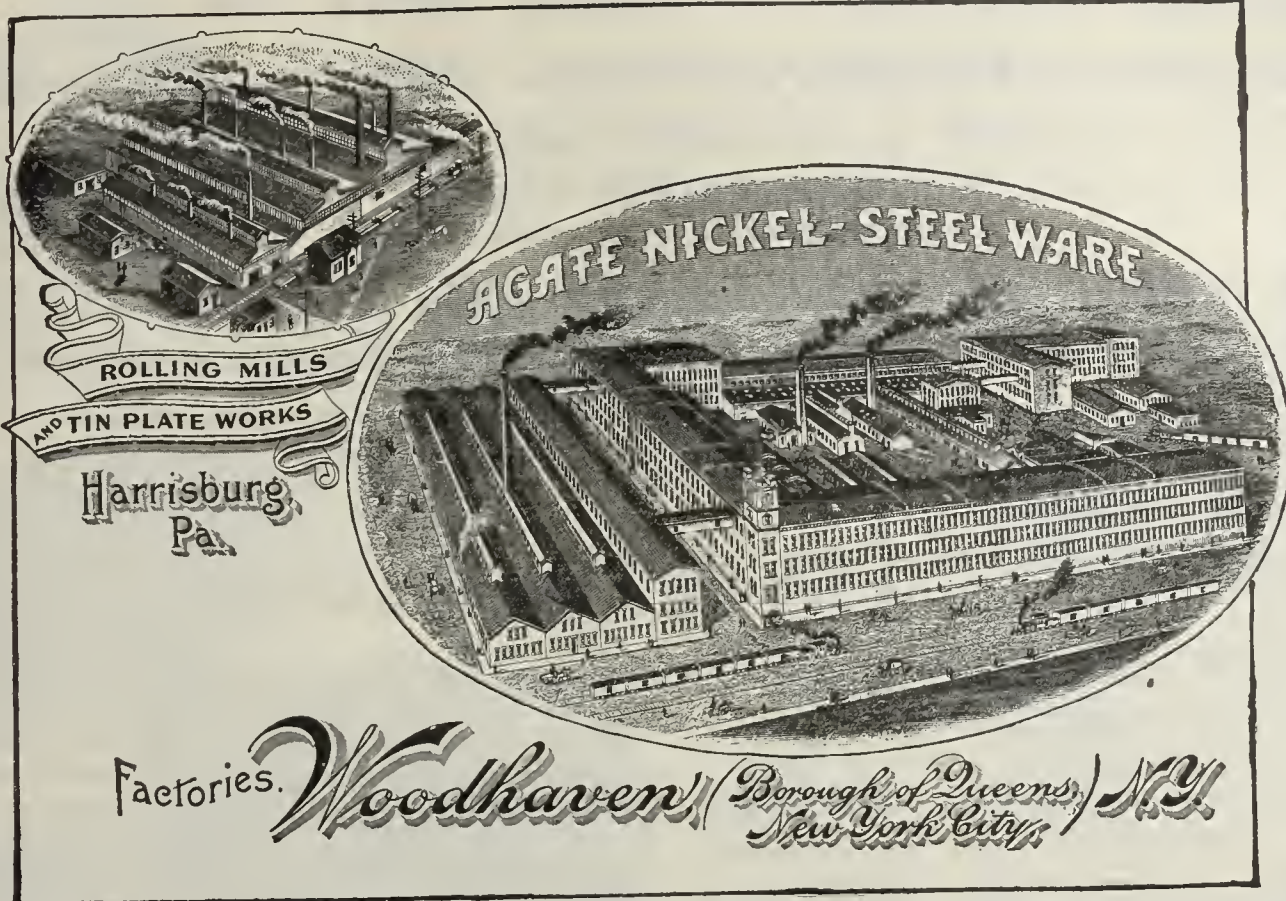
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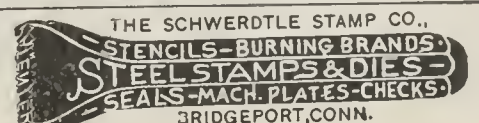
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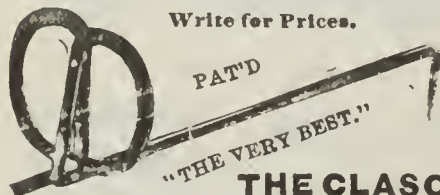
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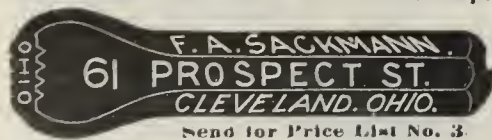
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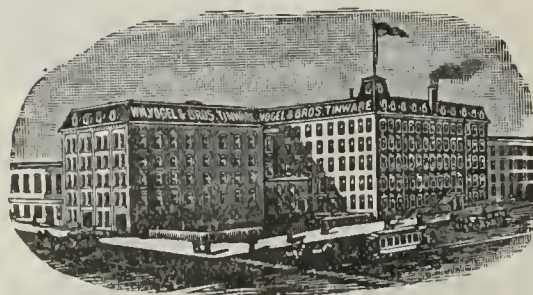
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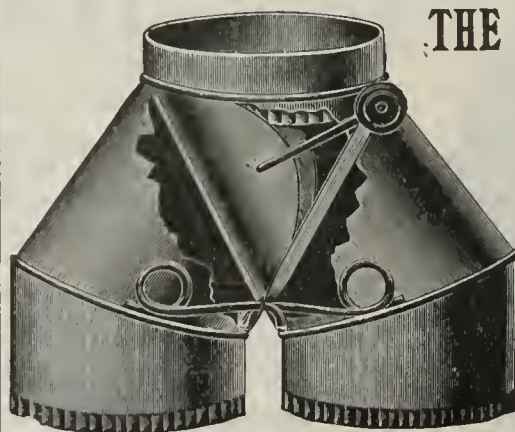
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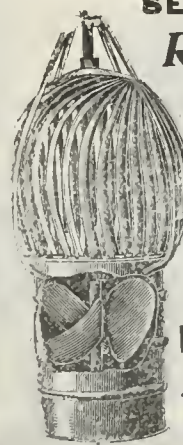
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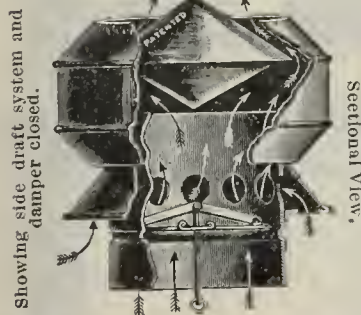
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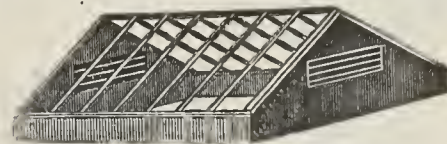


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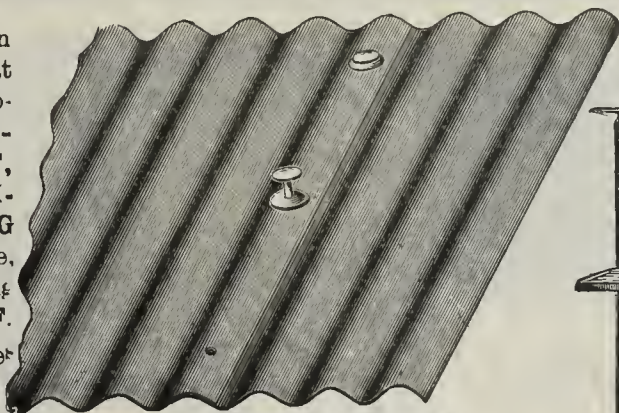
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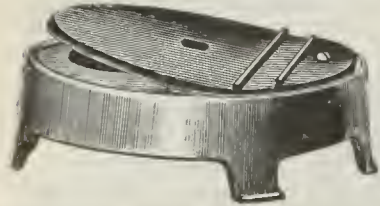
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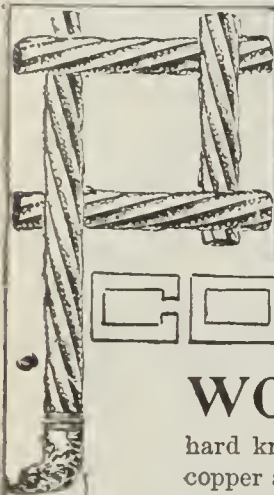
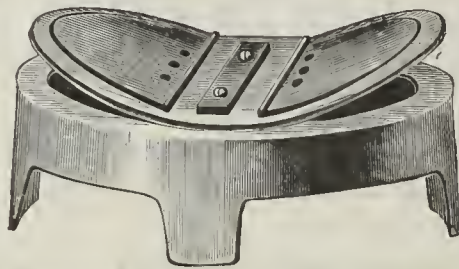
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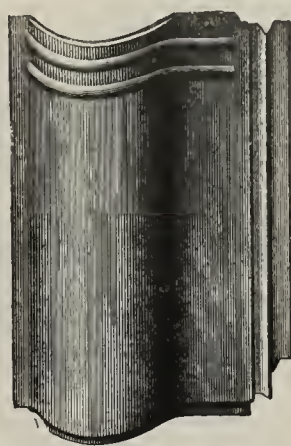


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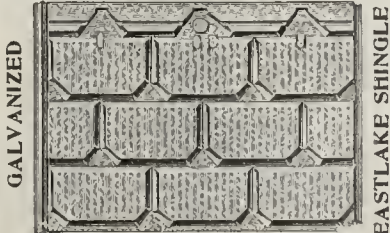
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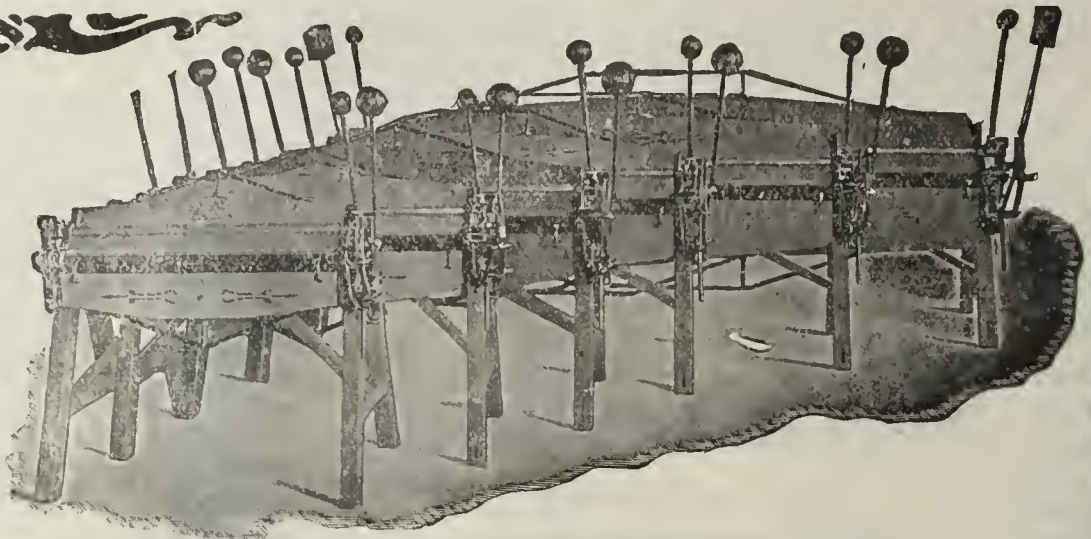
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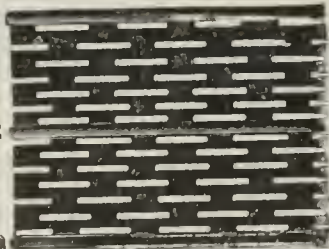
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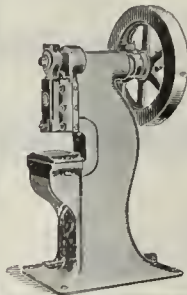
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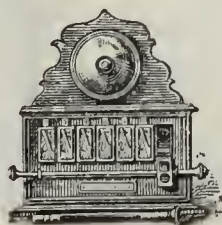
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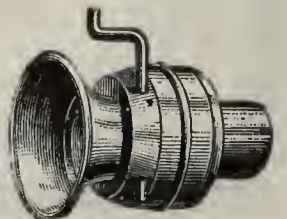


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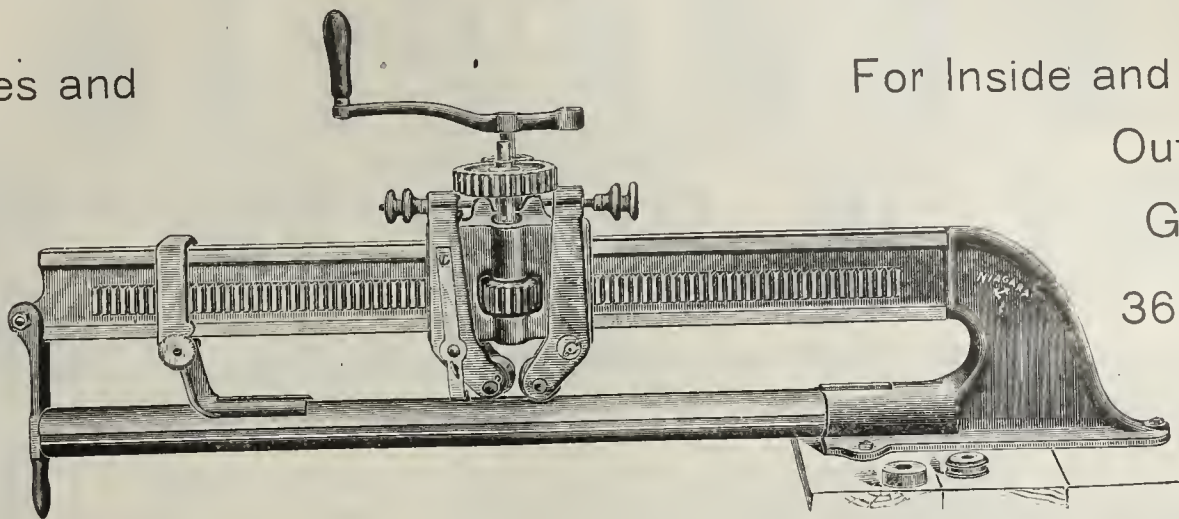
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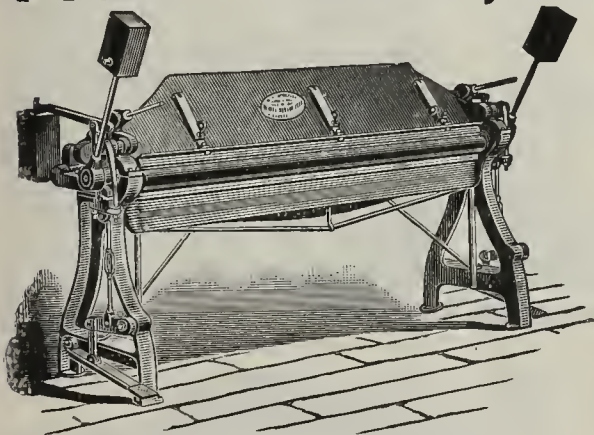
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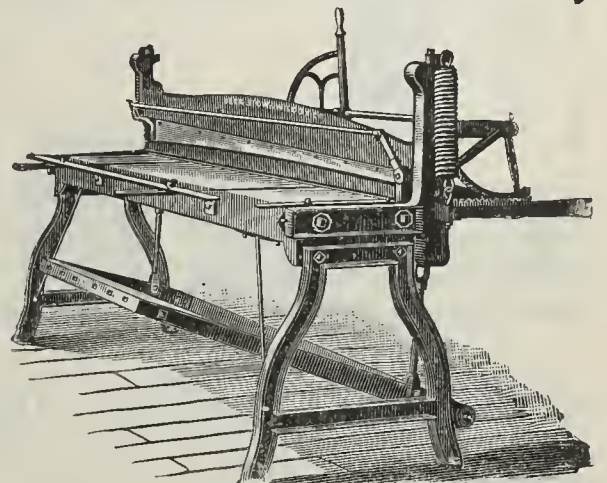


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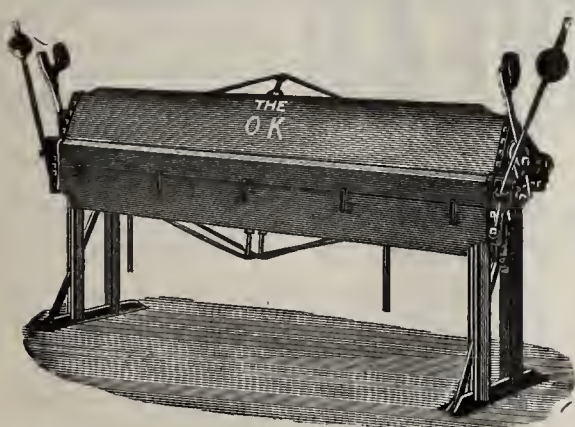
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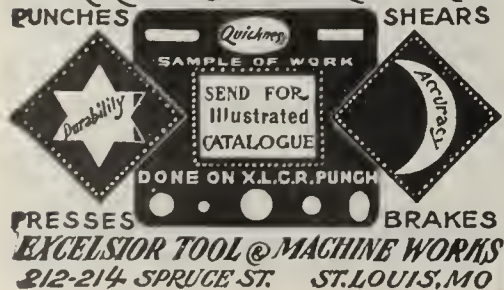
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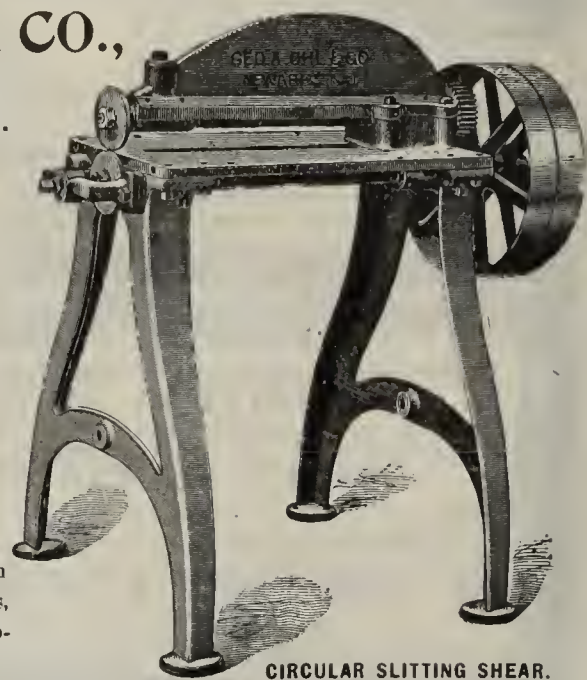
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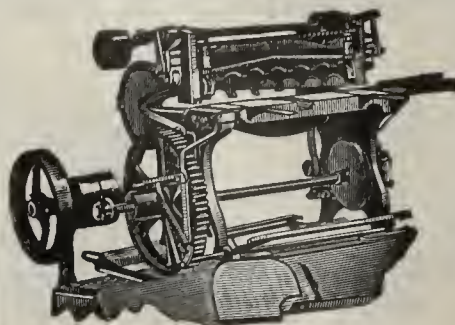
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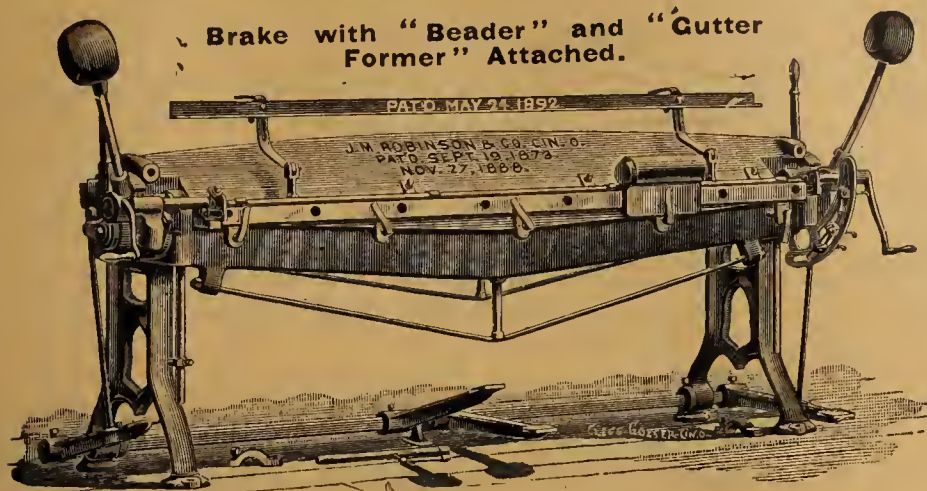


The most practical and power-
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BERTSCH & COMPANY.

CAMBRIDGE CITY, IND., U. S. A.
 Agents: MERCHANT & CO., Philadelphia, Pa.

GLOBE CORNICE BRAKE



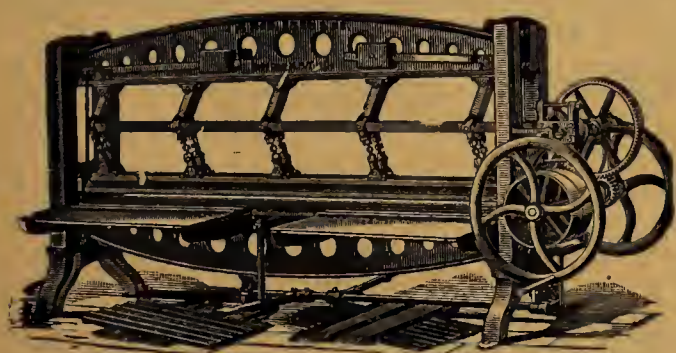
Brake with "Bead" and "Gutter Former" Attached.

With which to form Sheet Metal into Cornice Moldings, Ridge Caps, Skylight Bars; and with Beader and Gutter Former attached to Brake (price of which is extra), Bead and Form Gutters. Cornice manufacturers' Steel Straight Edges, 30-in. to 10 foot lengths.

Cornice Moldings, true and straight, are formed with ease and speed on the above illustrated 8 foot Cornice Brake, which Brake is made of cast and wrought iron and steel, many of which have stood the test of twenty-seven years and more, and are good for several years to come.

High Grade Cornice Brakes—try them and save your strength, time and money.

ROOFING AND BENDING MACHINE.



With Dies suitable will form Sheet Metal Roofing, Siding, Ceiling, Weather-Boarding, Skylight Bars, Metal Lathing, Gutters, Ridge Caps, Escaloped Steel Sheets and Cattle Troughs. Will bend and form No. 10 gauge and lighter in 6, 8, 10 and 12 foot lengths. Manufactured by

THE J. M. ROBINSON MFG. CO., CINCINNATI, OHIO.

BUILDERS OF SHEET METAL WORKING MACHINERY.

HAND POWER LEVER SHEAR.

Will shear as heavy as No. 10 Gauge Steel or Iron. Very powerful, strong and low in price.

Geo. C. Keene & Co.

Mfrs. The Keene Brake.

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IMPROVED
Patent Automatic Can Body
Double Lock Seaming
Machines.



COMBINATION
Presses and
Dies, Sheet
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Buy the Guaranteed Grades. STRICTLY NEW METAL.

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Each Brand ALWAYS THE SAME. Packed in 250 lb. Cases. Large Stock
Always on hand. Shipments Made Same Day Order Reaches Us.

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PRESSES. DIES.

Rolls Seamers.



Sheet Metal Tools.

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NORTH MAIN ST. ST. LOUIS, MO.

The Tea Shelf

on the **NEW MODEL GRAND** is of the most generous proportions of any yet constructed. The Extension Tea Plates when drawn out full width afford ample space for two of the **largest sized platters** with a large Rhode Island turkey on each. The live dealer who obtains the agency for the **NEW MODEL GRAND** will have cause for many Thanksgivings.

BARSTOW STOVE COMPANY,
BOSTON, 55 Portland St.
PROVIDENCE, R. I.
NEW YORK, Beekman
and Water Sts.

We Solicit Your Orders

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Prompt Shipment

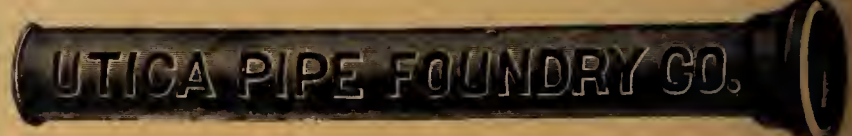
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TINNERS'
TOOLS and MACHINES.
TINNERS'
SUPPLIES.
186, 188 & 190 Water Street, and
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Oven Capacity
is one of the principal requirements in a modern range. This is increased 50 per cent. in the
MODEL HUB
With Steel Oven,
by baking on oven bottom and oven rack at same time.
NO CHANGING OF FOOD NECESSARY.
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Don't You Admire
the man who stands right up in his boots and tells you that he don't claim to sell the lowest priced goods in town, and the next minute takes off his coat and proves to you that when quality and service are considered his goods are cheapest after all? Yes! you admire him and you buy of him, and a good many of those kind of men sell
GLENWOODS.
Write the Weir Stove Co., Taunton, Mass.

HEATER PIPE TIN.
We can make prompt shipment of the following sizes :

I C.	I X.
20 x 23	20 x 23
20 x 26	20 x 26
20 x 29 1/2	20 x 29 1/2
20 x 32 1/2	20 x 32 1/2
20 x 36	20 x 36
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We solicit your orders.
McCLURE & CO.,
Manufacturers of Tin Plate,
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A WEEKLY JOURNAL OF THE
ROOFING, STOVE, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

L. LVI.
 MBER 21.

NEW YORK AND CHICAGO, NOVEMBER 23, 1901.

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FURNACE HEATING.

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Is a High-Class Technical Book

Containing much information that even the practiced furnace man will find of value. It gives the only systematic and reliable treatment of warm air heating published, covering all matters pertaining to the construction, location and setting of furnaces, and to effective and economical heating by the hot air system.

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The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

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MCLEOD & HENRY CO.,

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Gray Iron Castings. S. CHENEY & SON,
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As the Paragon Furnace possesses six particular points of excellence which have been enlarged on in the last six issues of the "Metal Worker,"—so the Excelsior Range possesses six points of excellence which will be enumerated hereafter. Enough for this issue to say that in Philadelphia, the birthplace and home of the Excelsior Range, there were at last count over 125,000 of them in daily use.

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APOLLO BEST BLOOM
 GALVANIZED IRON

The worse your galvanized iron, the longer it takes you to work it.

Loss in wages; no gain.

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RELIEF and NOISELESS BACK
 ELEVATOR VALVES, PRESSURE VALVES.
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 REDUCING VALVES, ARATORS.
 TANK TEMPERATURE CONTROLLER and
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 9-17 W. 13th St., - NEW YORK.

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The Stewart Oak

So popular among the dealers? Because it is a lively seller and brings good profit. It stays sold and nobody kicks at it except the coal man.

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This Ad. changes every week.

"KITCHEN
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—EXPLAINS THE—
PRINCIPLE
 —OF—
Piping Boilers

FIFTH EDITION
 Price, \$1.00

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CROSBY SPRING-SEAL GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
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In stock, large assortment
 Charcoal and Coke
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 20 x 23 to 20 x 39.
 Prompt shipments made.

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READ OUR "AD"
Page 6.
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ROUND OAK STANDARD OF AMERICA

CYRTIS GANDY DEL

CHICAGO 1901

Another great feature
in the construction
of the Genuine
Round Oak is

The double fire- pot with anti- clinker grate

and hot blast.
All the draft is
through all the fuel
all the time, giving
perfect combustion
and economizing fuel.
The rim discharge
at bottom of basket
allows all refuse
to pass out and
not clog the fire.
These great features
cannot be had in a
single firepot.
The cone grate holds
the fire to the outside
and prevents the
formation of clinkers.
The hot blast burns
the gases and soot and
makes white smoke—
another reason why
the Genuine
Round Oak is the most
popular heating stove
in this country.
If not sold in your
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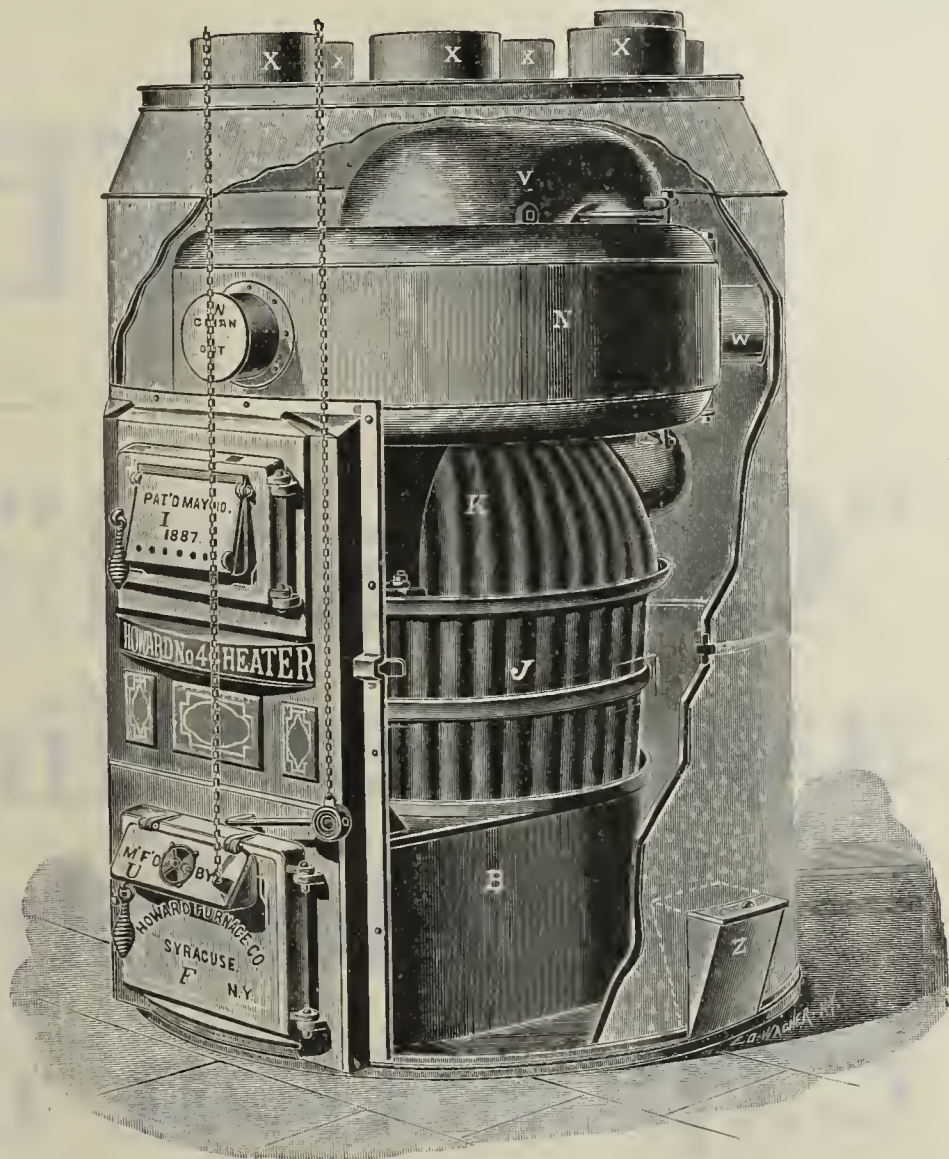
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REMARKABLY EFFICIENT.

FUEL SAVERS EVERY TIME.

The HOWARD

Single Radiator Warm Air Furnace.



Operated upon the "Down Draft" Principle.

A Powerful Heater, Responsive, Easily Controlled.

It is Highly Durable and "First Grade" in every respect.

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LARGEST MAKERS OF HEATERS IN THE WORLD.



First Prize Paris, 1900.



ANOTHER

"Garland" Stove awarded First Prize Gold Medal at the Exposition of 1900

First Prize

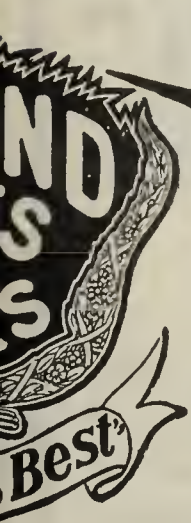
The Michigan Stove Works

Largest makers of Stoves

DETROIT. CHICAGO.



WORKS AT DETROIT, MICHIGAN.



VICTORY

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Paris, 1900.

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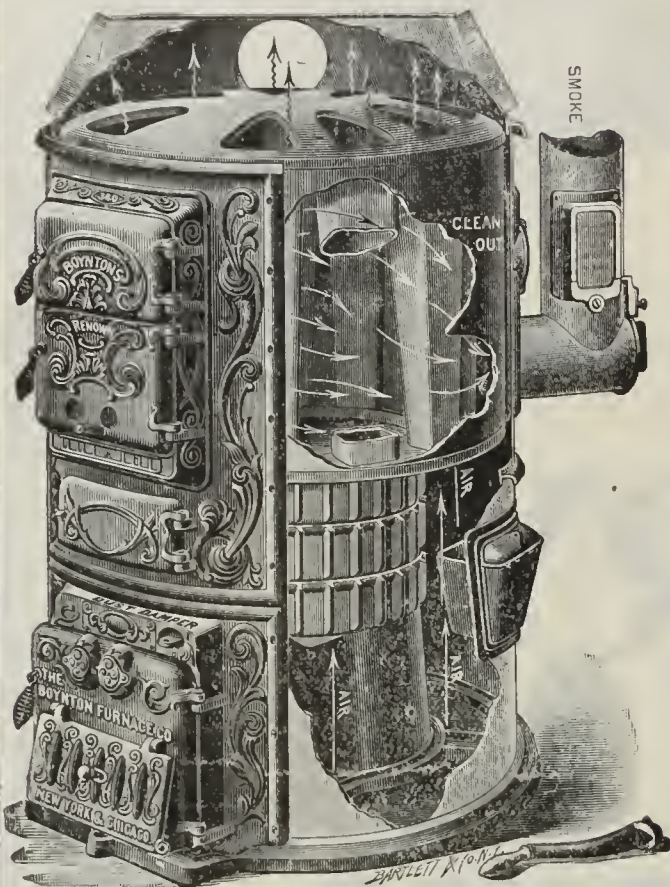
d Ranges in the World.

O. BUFFALO.



BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

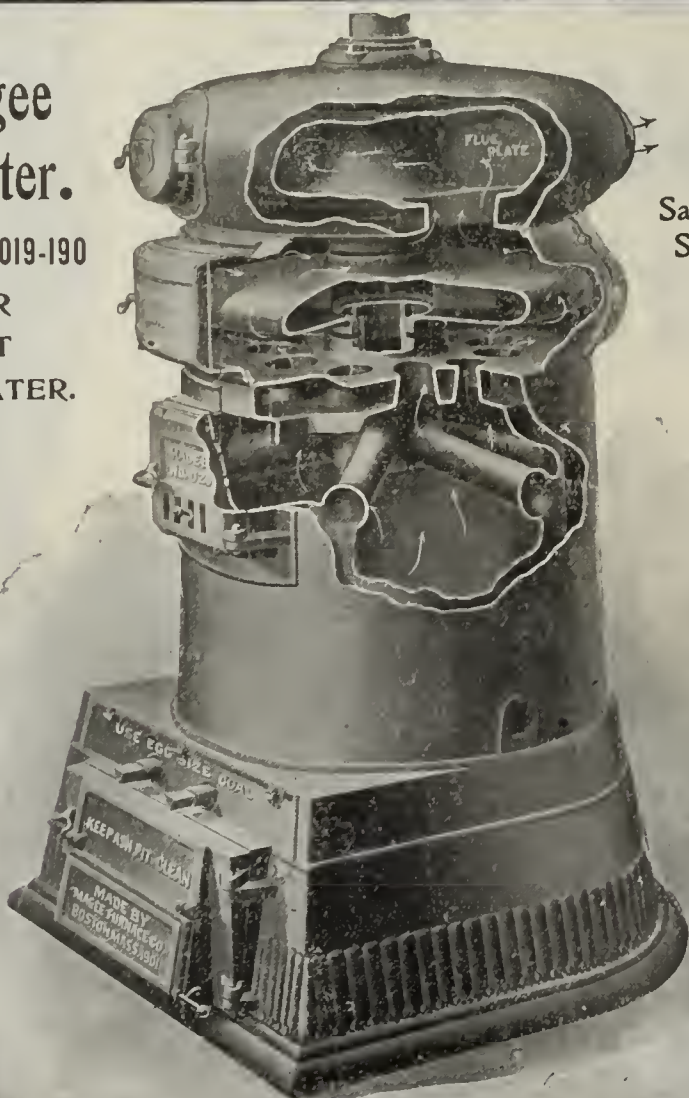
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CHICAGO.

Magee Heater.

Series 019-190

FOR
HOT
WATER.



Same
Style
for
Steam
Also.

Note flue capacity—indirect. No local circulation in this heater—impossible.

See also extraordinarily large amount direct fire surface.

Capacities: 600 to 1800 sq. ft. in Hot Water Heaters; 350 to 1100 sq. ft. in Steam Heaters. 5 sizes of each.

Magee Furnace Co.
Boston, 32-38 Union St.

Steam and Hot Water Heaters, Hot Air Furnaces, Combination Hot Air and Hot Water Ranges. Largest line under one name in the United States.

The **WALKER** **BOILER** for Steam: for Water

This boiler is attracting much attention among good judges of boilers. It seems to be just the boiler that everybody has been looking for; a plain, straight-forward, well-made boiler, with proper depth of fire-box and with ratings that are honest.

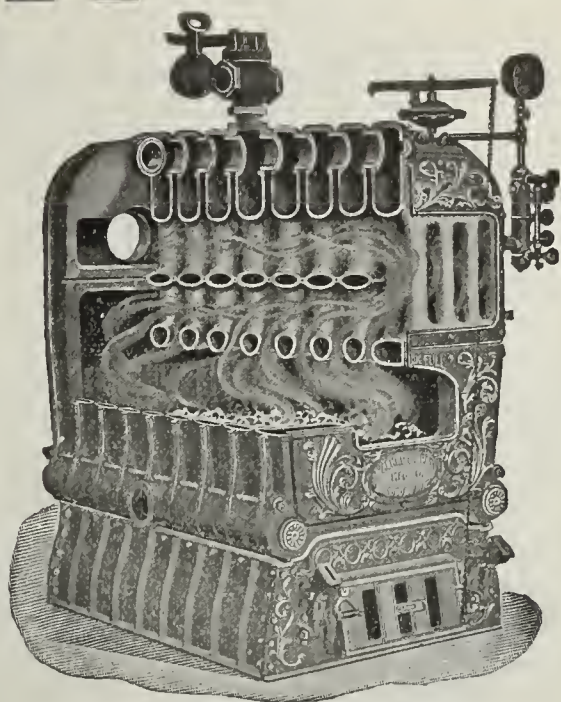
Positively more for a dollar, in this boiler, than in any other boiler in the whole country.

Copper-coated malleable push-nipples.

Write for discounts.

**Walker & Pratt Mfg.
Company,**

31-35 Union St., BOSTON, MASS.



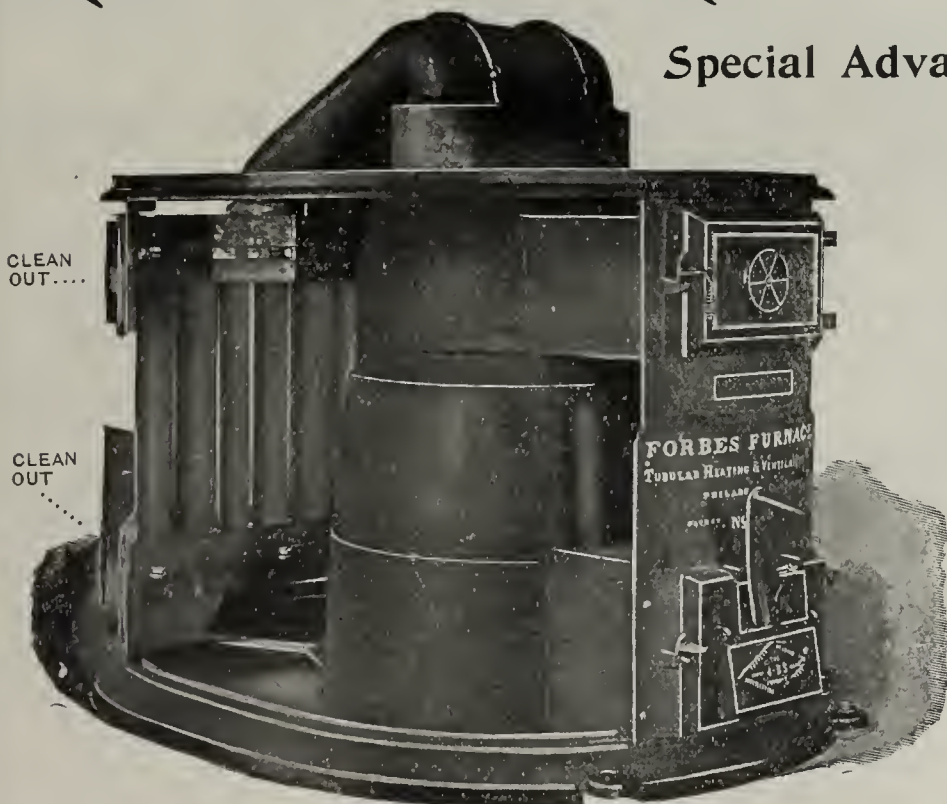
Makers Also of

**CRAWFORD
RANGES.**

Finest Factory in this Line in the World.

READ OUR OFFERINGS.

**Special Advantages Over All Other
Heaters.**



OUR HEATERS are only 4 ft 3 in. high, giving excellent elevation for Hot Air Pipes.

OUR HEATERS ARE ALL CAST IRON, no repairing of sheet iron drums necessary every few years.

OUR MANIFOLD TUBES are steel, $\frac{1}{8}$ inch thick, and will wear for a lifetime.

OUR HEATERS are supplied with the most modern grates, perfect dumping and shaking. Each bar can be separately replaced.

OUR HEATERS are so arranged that they can be perfectly cleaned by any one, and in a few moments.

Equally Efficient with Hard or Soft Coal.

Our Heaters save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE, REFERENCES AND FULL PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

MANUFACTURERS of the FORBES WARM AIR FURNACE.

232 Quarry St.,

PHILADELPHIA, PA.

HIGH GRADE HEATERS.

**Some Dealers Look
Is Made.**

Is Wiped Out

to the profit they make on the sale of a single furnace, and if a cheap furnace is used the profit looks large when the contract

When this cheap furnace fails to heat, and gives out in the middle of winter, the dealer is obliged to alter and readjust the setting, secure repairs for his furnace, and in the end the entire profit

and great disgust follows to both the purchaser and the dealer.

**OTHER
DEALERS
INSIST**

on using

**GOOD MATERIALS
WORKMANSHIP
FURNACES**

The result of such choice is satisfactory heating, pleasant feelings between the purchaser and the dealer, and the

**WARMEST
RECOMMENDATION**

of the furnace and the dealer.

**A GOOD BUSINESS
REPUTATION**

is obtained, and when good work is wanted this dealer is sought out and fair prices paid for his work.



**The Basis
of all heating is a
Good
Furnace,**

one that is
SIMPLE in operation,
ECONOMICAL in fuel
and
LONG-LIVED
without the need of re-
pairs.

The furnace shown here has all these merits, and the actual use of

Many Thousands
of these heaters
has demonstrated its su-
periority.

**FURNACE
DEALERS**
who are trying to
establish a

Good Furnace Business

should place themselves in communication with us, obtain our catalogue, see the line of heaters we make and get in position to do business on a good basis for the balance of the year 1901.

Our Prices are reasonable, and our treatment of our customers is

More Reasonable.

GIBLIN & CO., Utica, N. Y.

Ideal Boilers.



Ideal Invincible Water Boiler.

We welcome the critical customers. Great pains are taken to supply their wants, for with our extensive assortment of Ideal Boilers it is easy to please the most exacting buyers.

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Send for our 1901 catalogue—
profusely illustrated.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
CHICAGO.

New York,

Philadelphia,

Buffalo,

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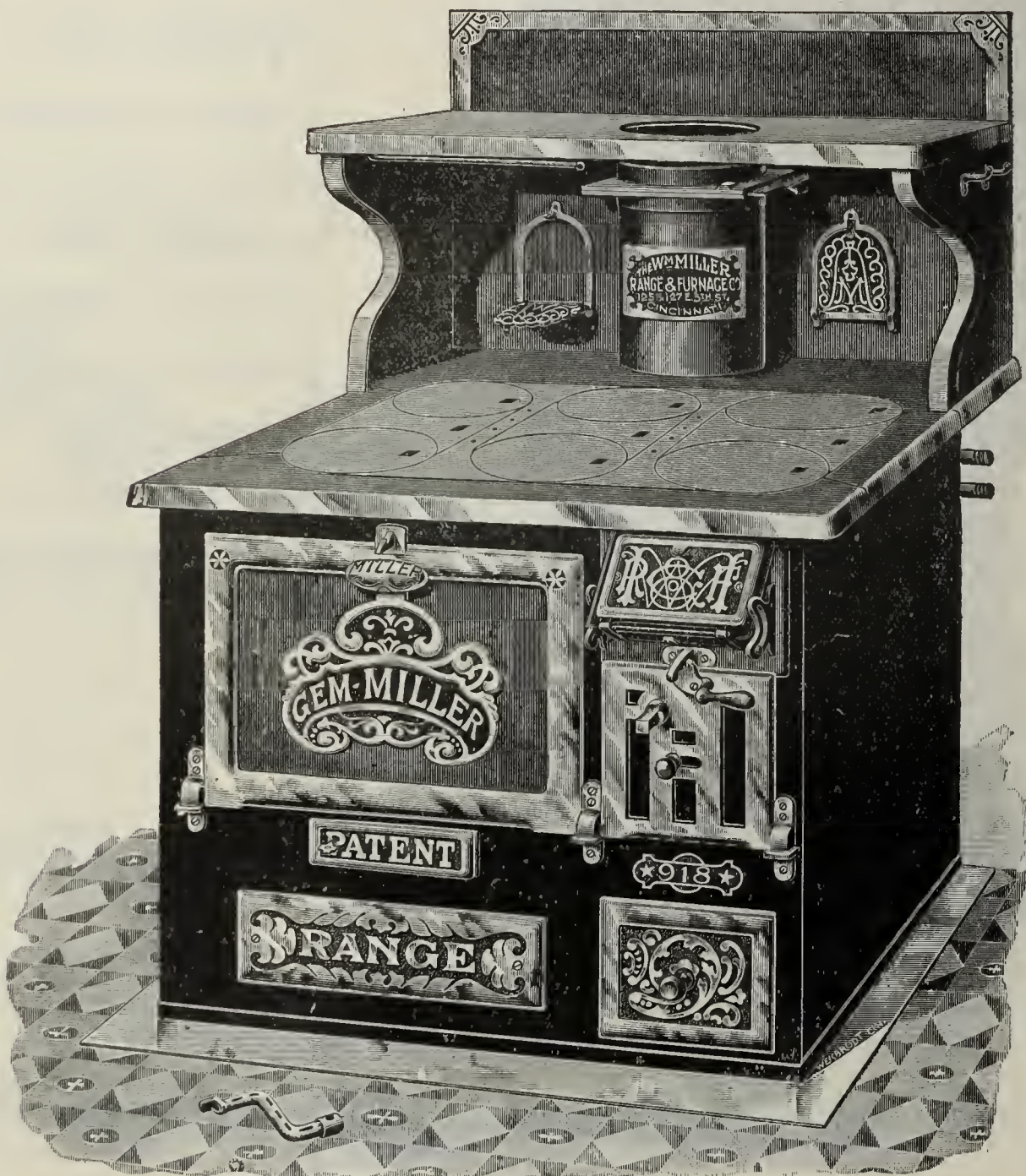
Minneapolis

and

Denver.

DO you want to sell a good Number One, Medium-Priced Range that will Roast and Bake with the best of them? If you do, then do not be persuaded to carry anything but the...

GEM-MILLER STEEL-PLATE RANGE.



Which are far superior to other so-called first-class Ranges as to Roasting, Baking and Durability that are made.

WITH improved removable Duplex Grate, improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickered instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

Special attention is called to the easy manner of Removing and Replacing the Grates and Grate Frames in these Ranges without interfering with the Water Backs or Linings. Simply by taking out the small bolt and removing the Front Grate the entire Bottom Grate and Frame can be drawn out through the Front Draft Door.

THE WM. MILLER RANGE & FURNACE CO.,

Nos. 125 and 127 E. Fifth Street, CINCINNATI, O.



CINDERELLA

STEEL RANGES

REPRESENT

The Best Materials,
The Best Construction,
The Best Workmanship.

THEY ARE

*The American Standard for
Excellence.*

ALL STYLES AND SIZES AT
MODERATE PRICES.

We can fill all orders promptly.

We would be pleased to send our catalogue.



PITTSBURGH STOVE & RANGE CO.,

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WESTERN SALES AGENT,

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GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

ECONOMY GAS HEATING STOVES.

FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, *Durable, Economical* and *Attractive* gas heating stoves on earth.

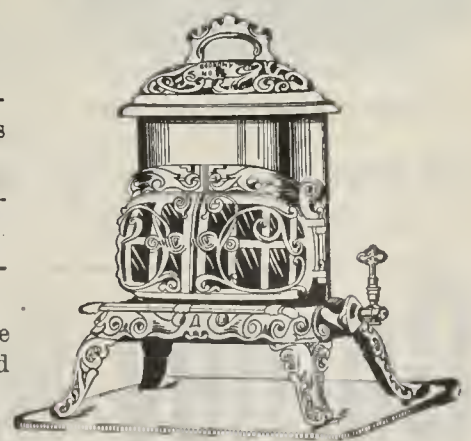
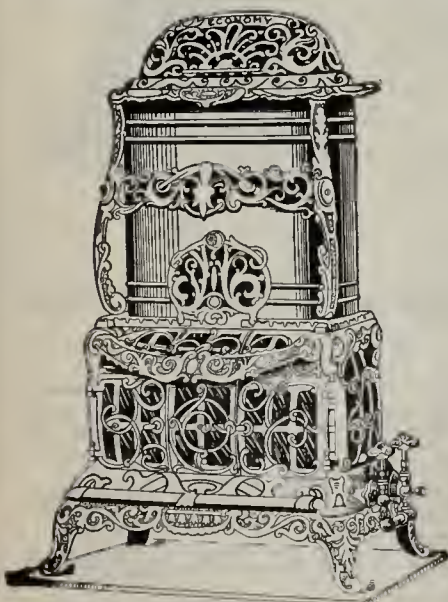
The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market. *Absolutely free from odor or condensation.*

By securing the agency for the *Economy*, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

ECONOMY STOVE & MFG. CO.,

Write for Catalog.

DETROIT, MICH.



Model Oak

Entirely New Line for 1901.

We use the old name, but the numbers are different.
The Round Air Tight Register is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion through the opening.

The register construction is such that the Grate Handle can be pulled out through the register opening.

The Extension on Top of the Fire Pot extends up inside of the steel drum and is cast solid with the fire pot so it cannot twist and warp.

The Sectional Ring fits over the flange turned out on the bottom of the steel drum.

The Ash Pan fits tightly all around the edges of the ash pit.

The joints remain tight.

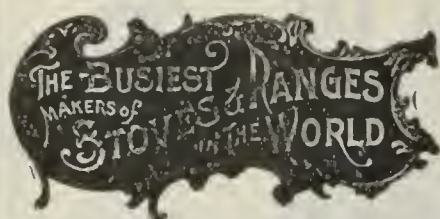
The price is just right.

Ask for more information.



MODEL OAK.

The Portsmouth Stove & Range Co.,



Portsmouth, O.

MORLEY BROS.,

Saginaw, Mich.,

Agents for Michigan
and the Northwest.

A Profitable Business

IS THE RESULT OF HANDLING SOMETHING GOOD.



DOUBLE RADIATOR. ALL CAST IRON.

“MUELLER” Furnaces and Boilers

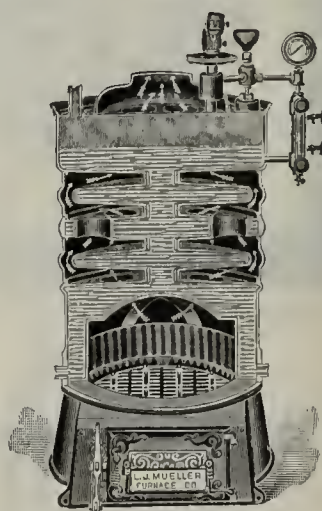
Have Accomplished This Result for Our Customers.

Heaters of All Sizes and for All Kinds of Fuel.

Write for Catalogue and Prices.

Everything in the Heating Line.

Established 1857.



190 Reed St.,

L. J. MUELLER FURNACE CO.,

MILWAUKEE, WIS.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

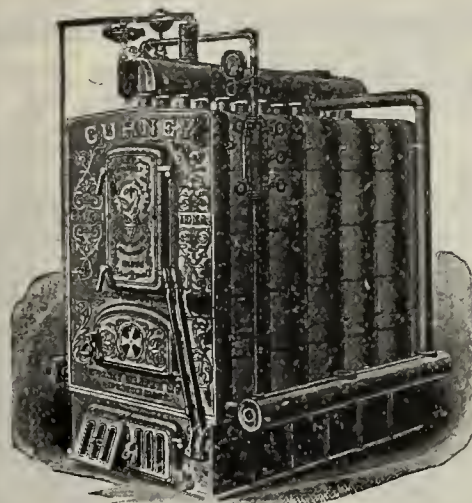
GURNEY

"Bright Idea" Heater

thinks of it: "My house is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.



Bright Idea Steam Boiler.

GURNEY HEATER MFG. CO.,

74 Franklin St., BOSTON, MASS.

111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

Some Furnaces

are like some people—they have insatiable appetites, but give nothing in return for what they consume.

THE BENGAL FURNACE

burns less coal and gives more heat than any other furnace made.

Remember *Quality Lives Long After Price is Forgotten.*

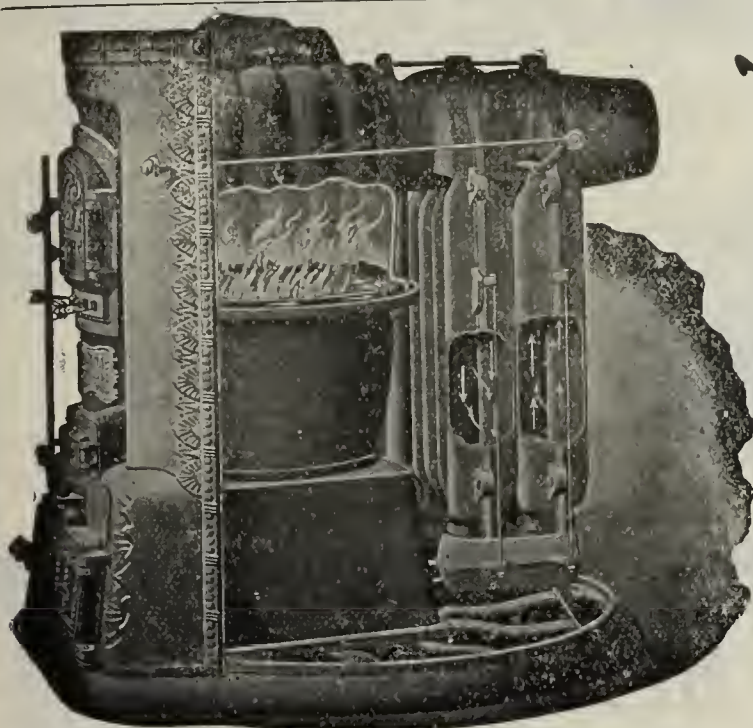
MAKE NO MISTAKE.

Secure the agency for the BENGAL before it is too late.

MADE BY

FLOYD, WELLS & CO.,

ROYERSFORD, - - PA.



Eastern Selling Agents,

GURNEY & CO.,

Washington, Hanover and Elm Sts., BOSTON, MASS.

Gilt Edge Warm Air

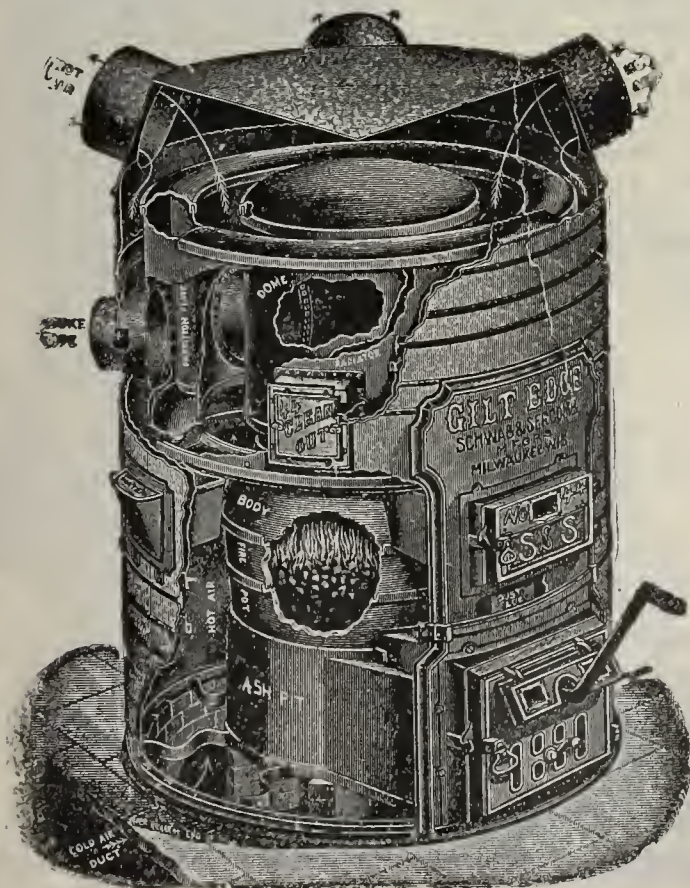
AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.



JEWEL STOVES AND RANGES..



**A Complete, Well Advertised Line.
Low Prices and Good Workmanship.**

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



**COOK STOVES,
OAK STOVES,
HEATING STOVES,
Air Tight Wood Stoves.
FIRE PLACE HEATERS,
FURNACES.**

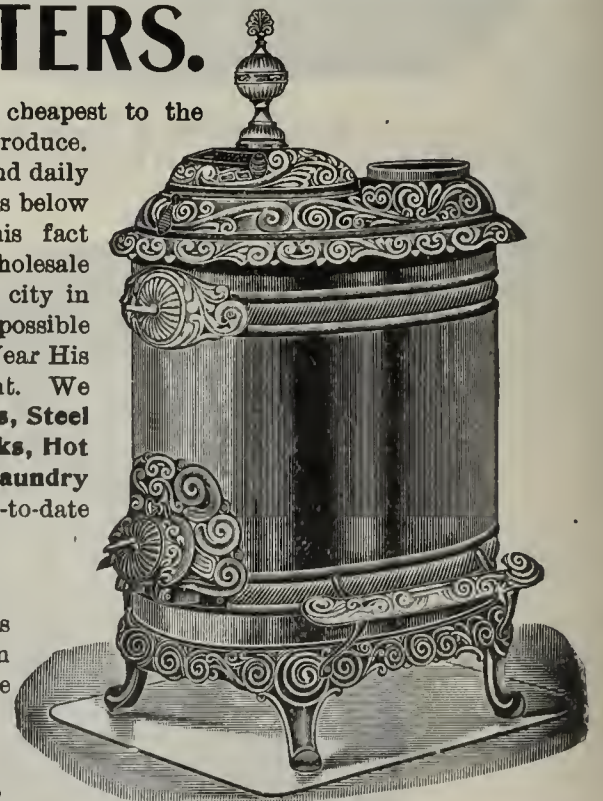
Send for Catalogue and Price-List.

**THE B. C. BIBB STOVE CO.,
BALTIMORE, MD.**

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

SEND FOR CATALOG.
MILWAUKEE, WIS.

Royal Heaters.

MANUFACTURED BY THE

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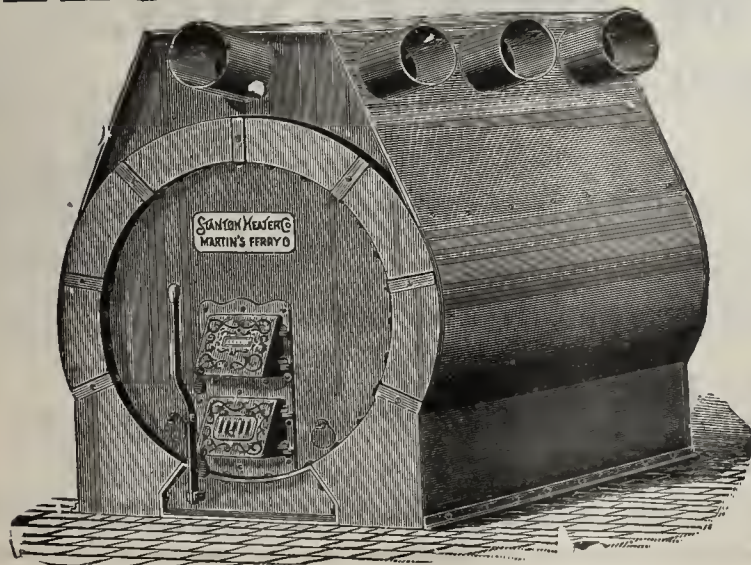
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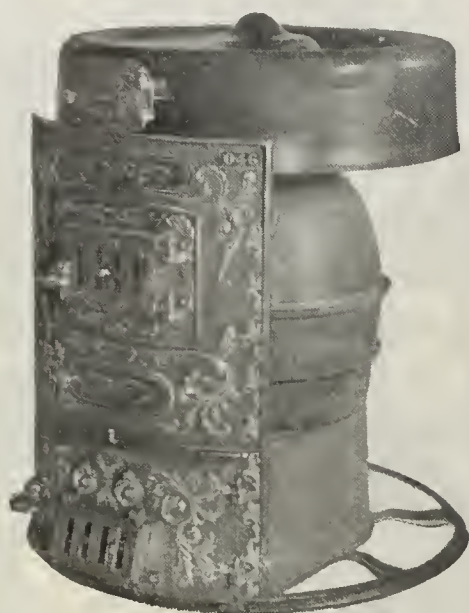
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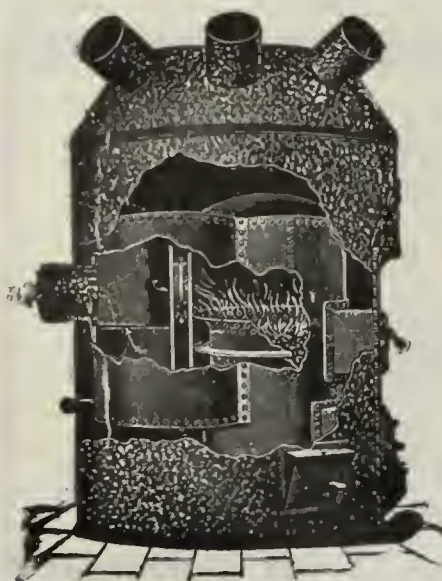
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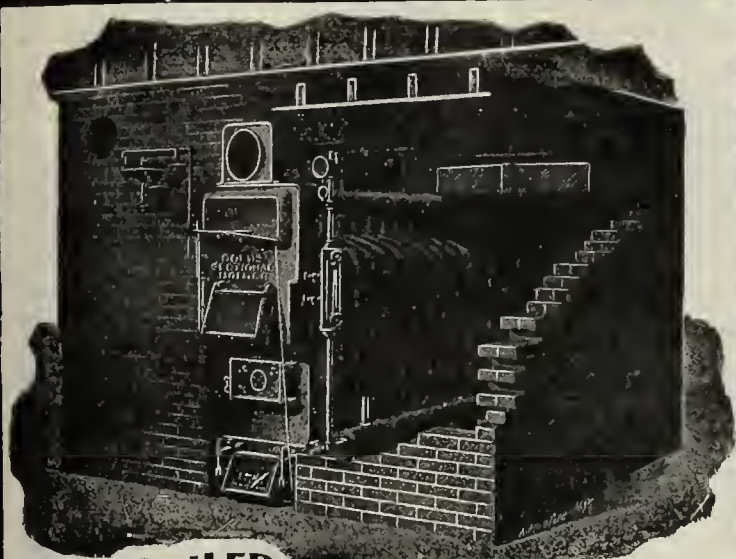
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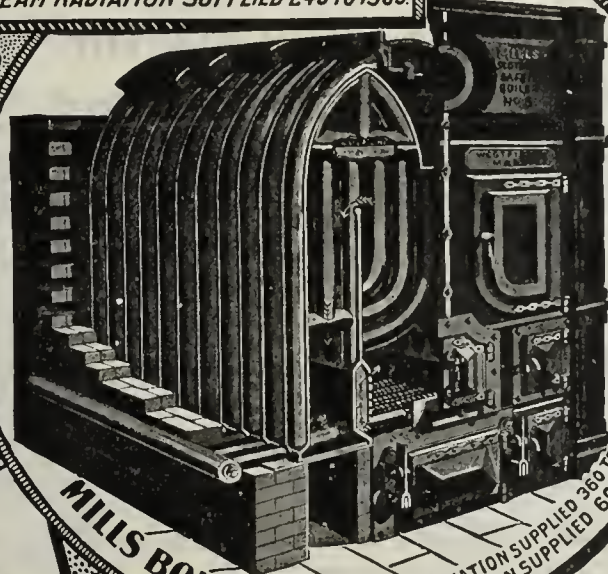
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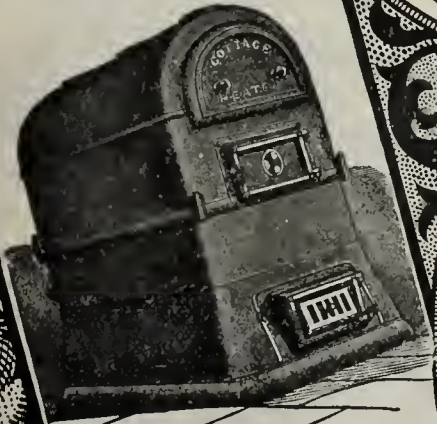


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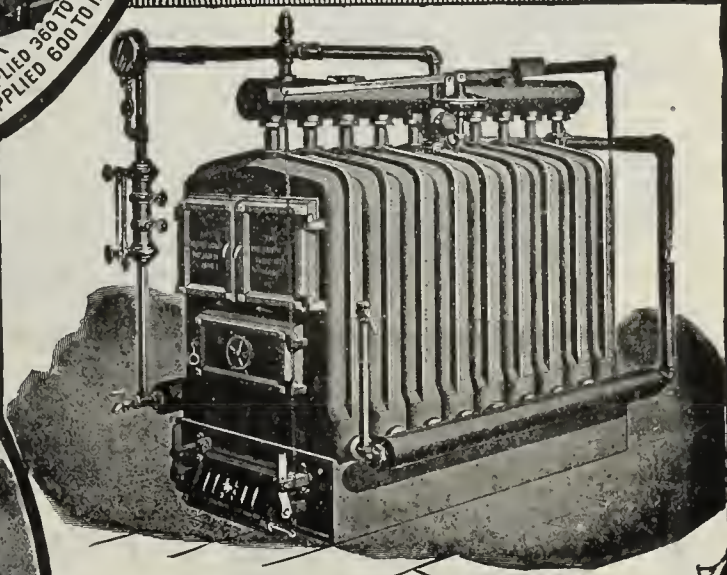
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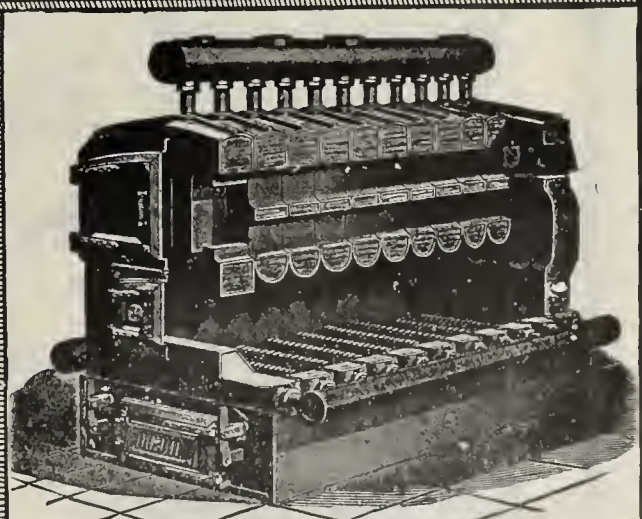
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The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

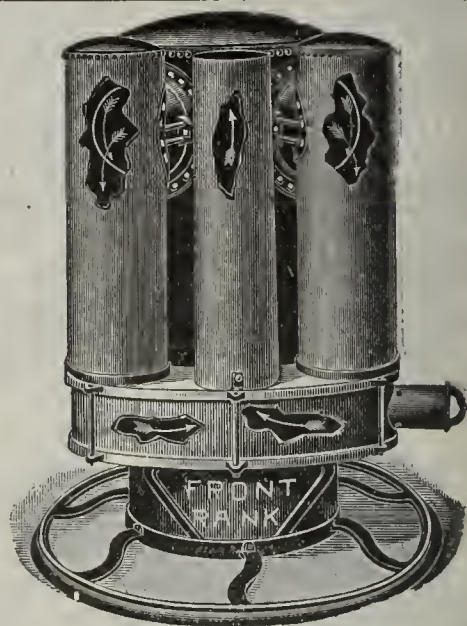
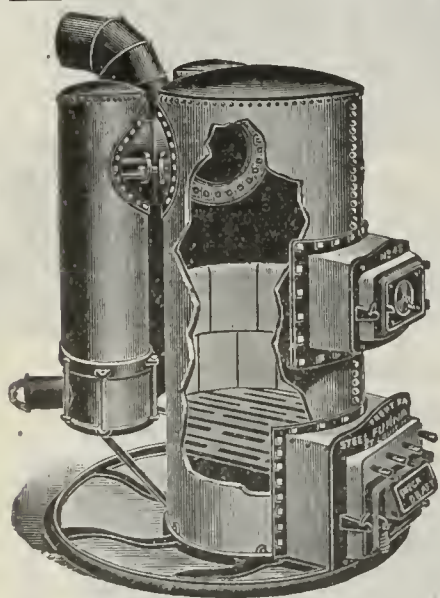
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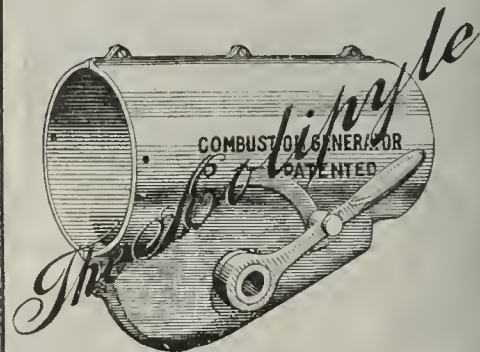
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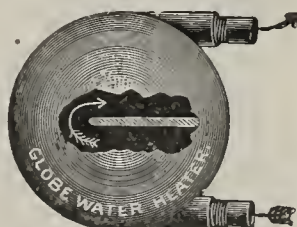
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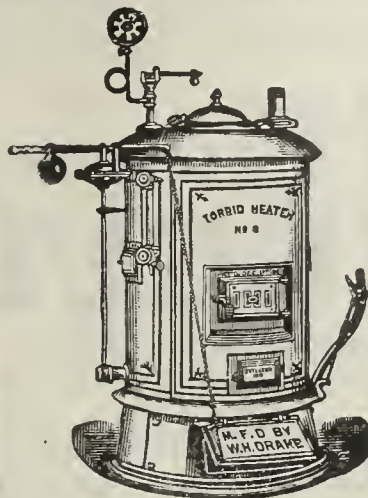


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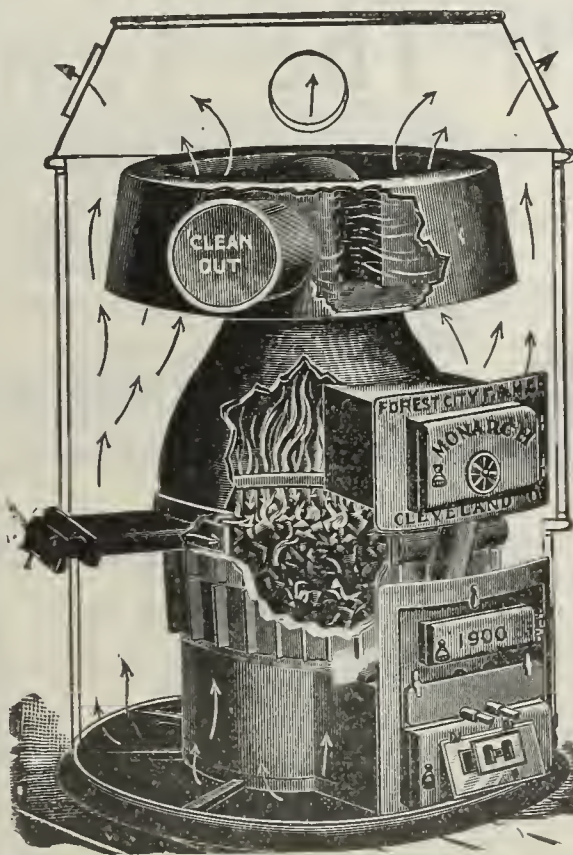
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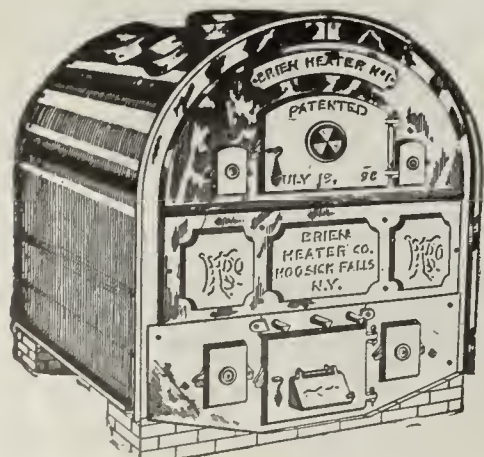
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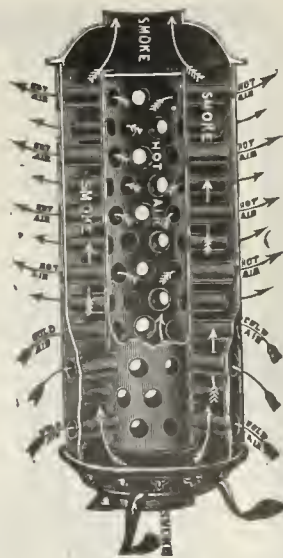
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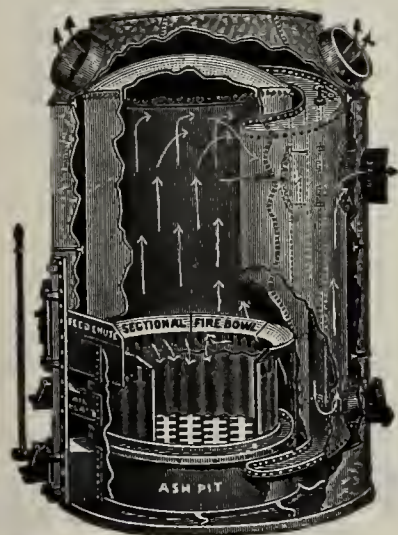
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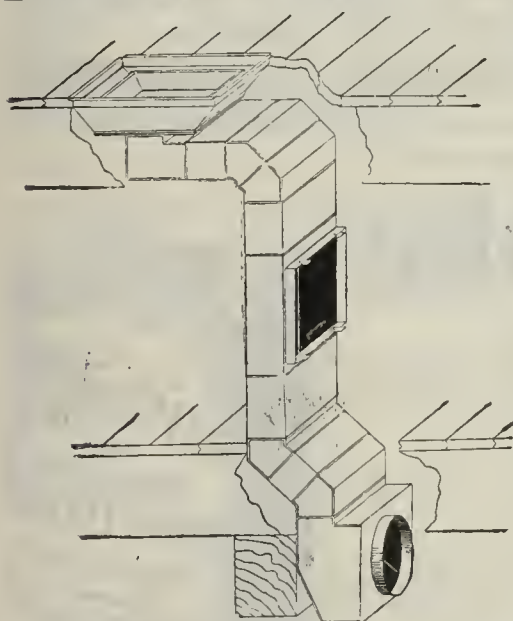
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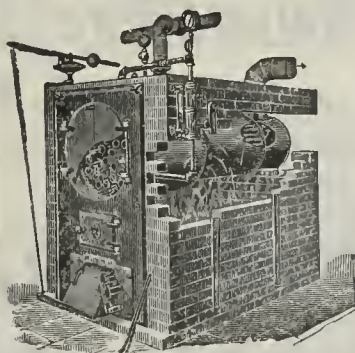
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Registers and Ventilators

Send
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Seavey Mfg. Co., :: BOSTON, MASS.

BUTLER STEEL FURNACE

The cheapest and best heating furnace on the market.

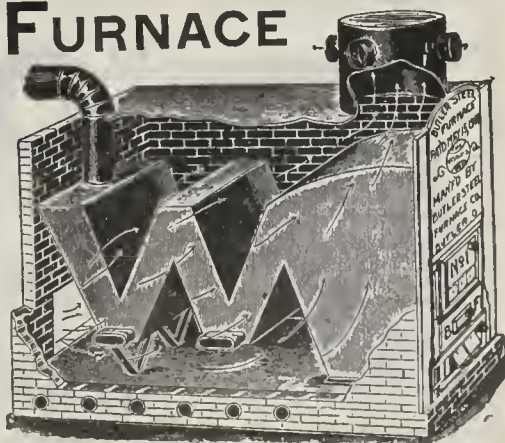
This furnace is a fuel saver and will not clog with soot.

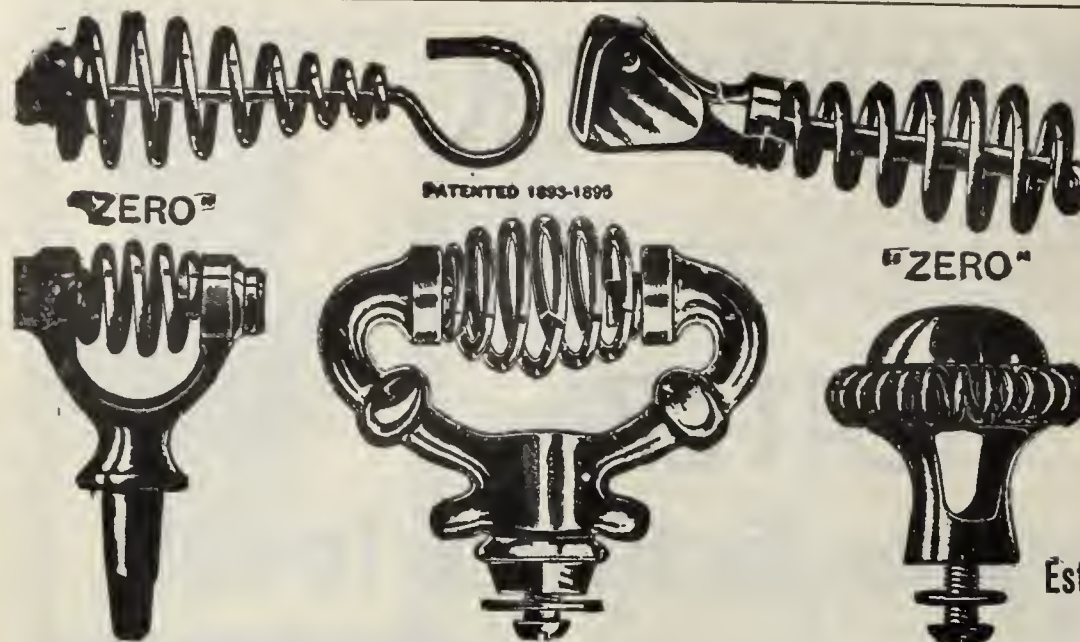
You can burn slack, wood or any kind of soft coal.

For further information and prices write to

BUTLER STEEL FURNACE CO.,

Butler, Ohio.





"ZERO"
PATENTED 1893-1895
"ZERO"

THE BEST
HOT AIR
DAMPER
ATTACHMENT MASH.

"ZERO"
WIRE GOODS.
MANUFACTURED BY
Est. of **W. F. GREENE,**
TROY, N. Y.

You Will Make

more dollars if you push the sale of **RUTLAND** goods, as they always give satisfaction, and satisfied customers are the come again kind.



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CHICAGO, ILL.
NORTH EAST, MD.

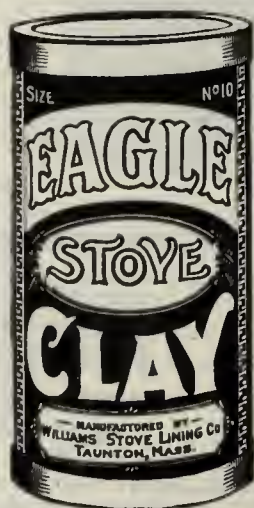
Rutland Fire Clay Co.,
RUTLAND, VT.



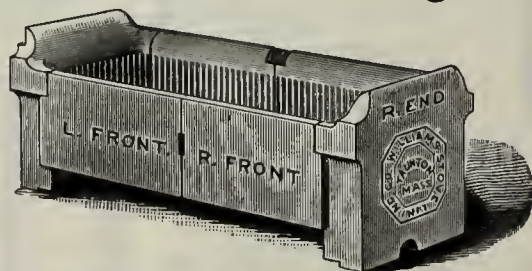
INCANDESCENT Gas Fuel.



Prices and samples
free by mail.



STOVE Brick Linings.



Prompt shipment and
best quality guaranteed.

WILLIAMS STOVE LINING CO., - Taunton, Mass.



"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, **DOUBLE LOCK SEAM** in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

Largest and
Best Stock.
Special Stock of
WATER FRONTS,
Thoroughly Fitted and
Tested.



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40-42-44-46 Union St.,
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Duplicate Postals, Order
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REPAIRS

A PERFECT FIT

For All Stoves and Ranges.

Mica, Stove Polish, Stove
Bolts, Furnace Cement.

A. G. BRAUER, 316-318 North 3d St., St. Louis.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts
a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or
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Largest Jobbers in New England.

HENRY N. CLARK CO.

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SHINES FOR ALL

It is the polishers friend, and
will polish anything.
Write for free sample
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Ind'p'l's,
Ind.

GEO. W. HOFFMAN



PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works, - Troy, N. Y.

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Ornamental and Stove Patterns.

Sketches and Designs for Stove Work
of all kinds.

Correspondence Solicited.

505-507 Cedar Street,

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FIRE BRICK,
SEND US
YOUR ORDERS. WATER FRONTS.

O. G. & D. H. DONALDSON,

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SAMPLES SENT FREE to Stove Dealers.



This New Patent Prepared Dry
Stove Polish—it Mixes Quicker—
Shines Quick and Easy—Black
and Brilliant Waterproof and
Rustproof—Keeps any length of
time—Never Spoils—Cheapest Pol-
ish in the market—1 Box will do
as much work as 15 lbs. of Paste—
Size of Box, 10½ L x 8¼ Deep, 6
in. wide.

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Chicago, Ill.

ADDRESS DEPARTMENT A.

WHEN IN DOUBT—

Use Original Stove Repairs for that tired feeling
incident to using the ordinary kind; perfect fit-
ting, correct goods and prompt service are some
of the features included in every shipment with-
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The finest order book ever issued free with first ship-
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UNION STOVE REPAIR CO.,

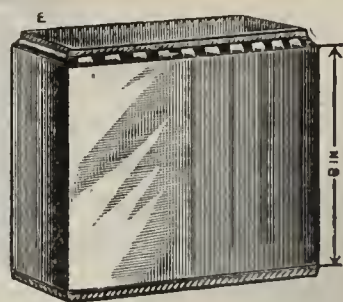
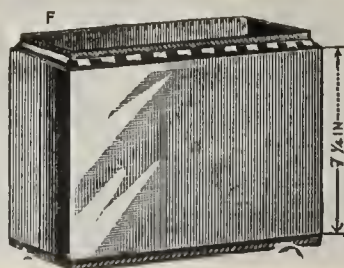
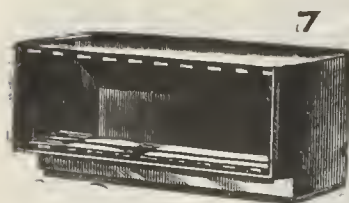
2854 Archer Avenue, Chicago, Ills.

FIRE BRICK LININGS

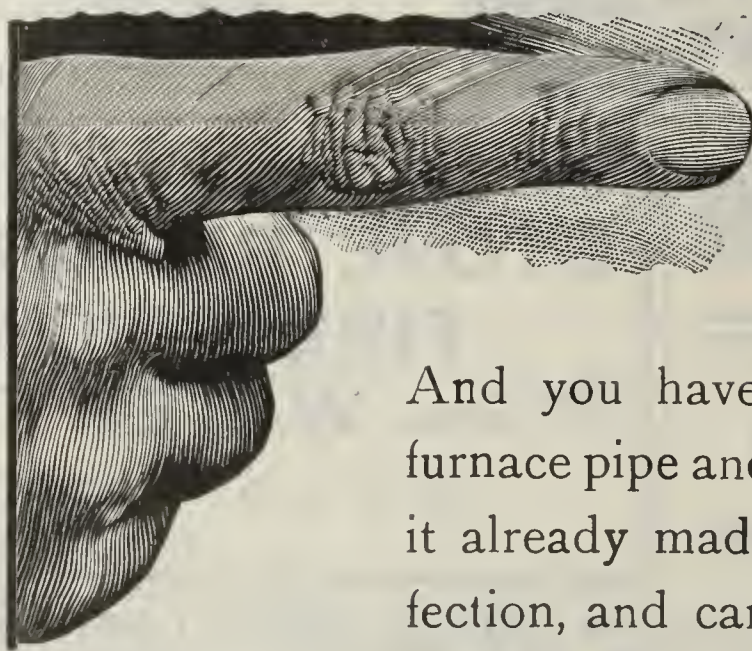
For all Stoves, Ranges and Heaters.

PRESBRY STOVE LINING CO.,

TAUNTON, MASS.



This is Your Busy Time



And you have no time to make furnace pipe and fittings. We have it already made, and it is all Perfection, and can furnish you at a

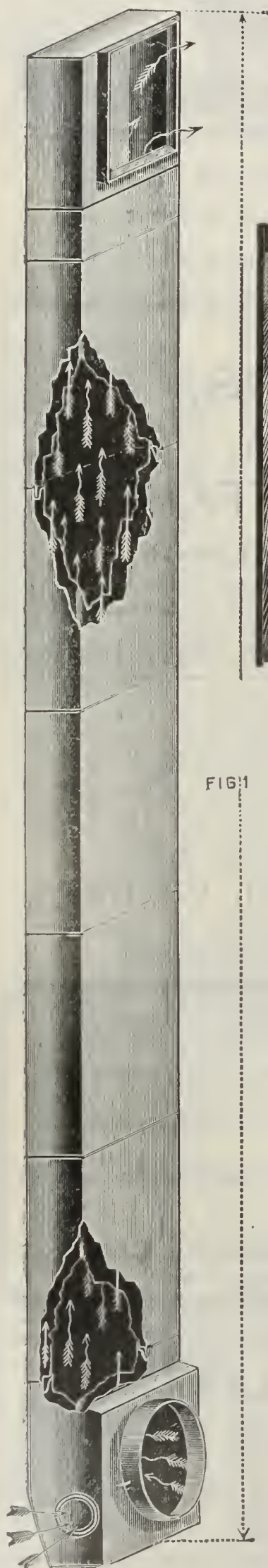
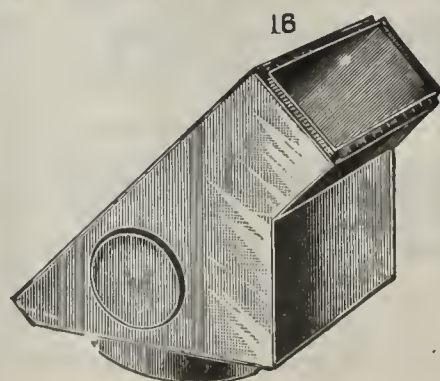
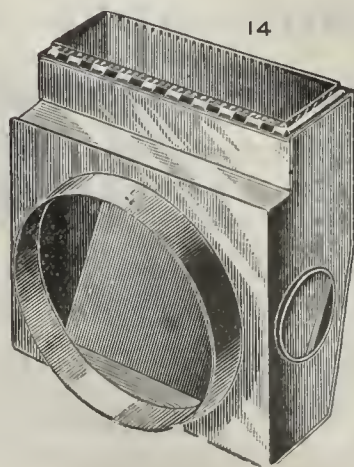
less price than you can make it.

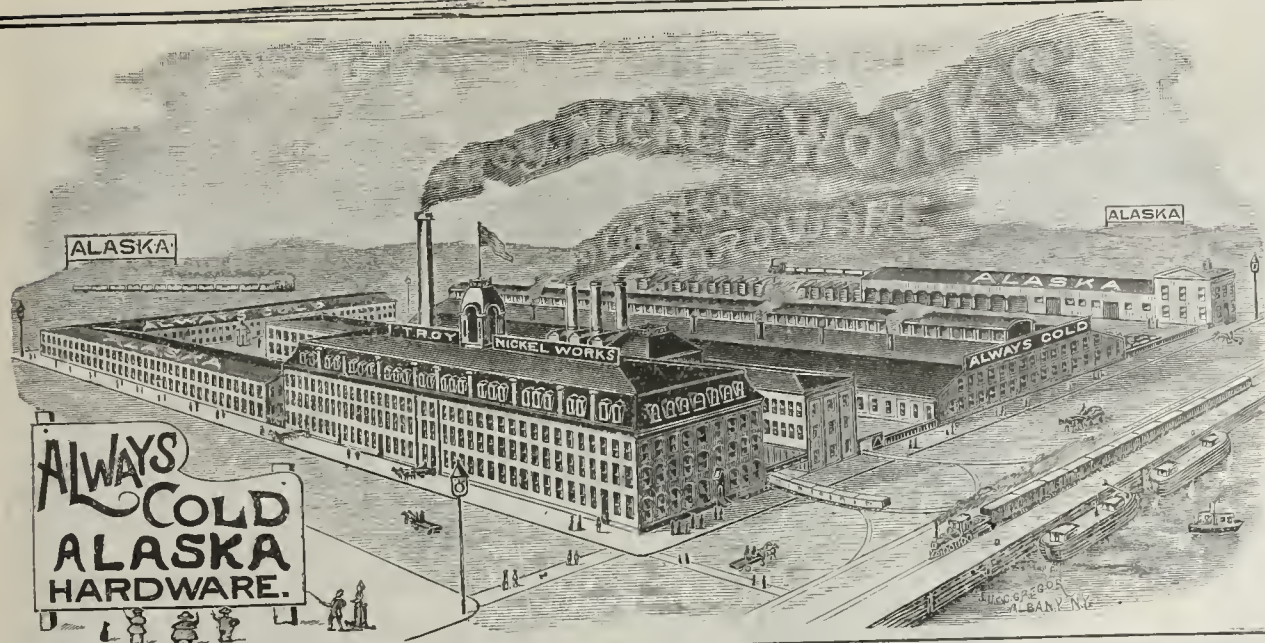
Every joint makes a perfect fit and you can install it in less than half the time required for any other make

We carry in stock a complete line of Registers, Furnace Cement and Asbestos Paper.

SEND FOR COMPLETE CATALOGUE AND PRICES.

The Perfection Furnace Pipe Co.,
TOLEDO O.





Western Branch,
Chicago, Ill.

TROY NICKEL WORKS,
ALBANY, N. Y.

Cable Address, (Nickel.)

MARCY STOVE REPAIR CO.,
MANUFACTURERS OF
RANGE, STOVE AND HEATER REPAIRS
AND FIRE-BRICK LININGS,
74 Beekman Street, New York.

FOUNDRY,
Forth Amboy, N. J.

FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

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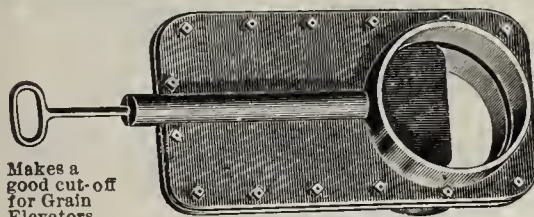
STOVE REPAIRS
WATER FRONTS
AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we
have the stock on hand.
Repairs for 20,000 different stoves and furnaces.

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M. D. VALENTINE & BRO CO.
FIRE BRICK
CUPOLA LININGS A SPECIALTY.
WOODBIDGE. N. J.



Makes a
good cut-off
for Grain
Elevators.

IMPROVED
WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO
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Brazing Graphite

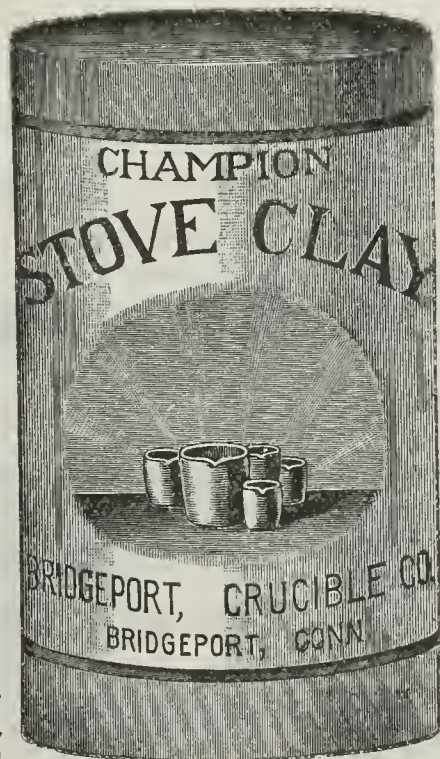
Prevents the brass from running over and sticking to the metal. Used
and recommended by bicycle makers and repairers and others. Send
for sample and price.

JOSEPH DIXON CRUCIBLE CO. - JERSEY CITY, N. J.

HANDLE THE BEST.

CHAMPION STOVE
CLAY

Is the only brand made of
crucible materials, viz.: Im-
ported German Fire Clay and
Plumbago from Ceylon.



Dealers are invited to send
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Packed in neat, attractive,
round pasteboard boxes of
three sizes: large, medium
and small, holding about 10
lbs., 6 lbs. and 2½ lbs., re-
spectively.

ALSO SOLD IN BULK.

Your jobber can furnish the
goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.



The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of $\frac{1}{4}$ inch cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.

It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

NEW YORK: A. L. Canfield, 284-286 Pearl St.

CHICAGO: Excelsior Steel Furnace Co.

Sizes: 6, 7, 8, 8 $\frac{1}{2}$, 9, 10, 10 $\frac{1}{2}$, 11, 12, 12 $\frac{1}{2}$, 14 and 15.

When in want of

Grates, Linings, Water Fronts

and other repairs for stoves and ranges

YOU CAN'T DO BETTER than to send us your orders.

BEAR IN MIND

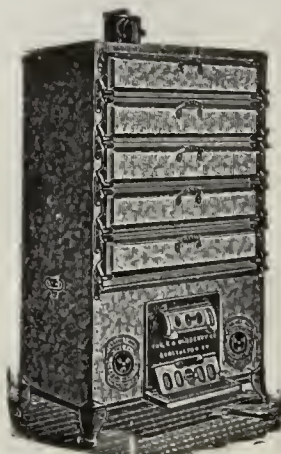
that we can furnish repairs for any of Barstow's and Spicer's Stoves promptly and at lowest prices.

SEND US A TRIAL ORDER, you will not regret it.

A. J. MAGOON & SON,

313 WEYBOSSET ST.,

Providence, R. I.



CABINET.

PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

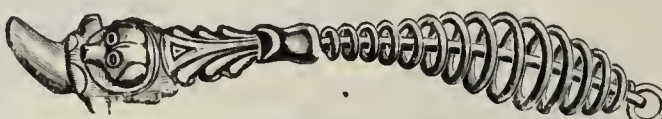
Also the best oven for Core Baking, Japanning, Enamelling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

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The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

Stove Pokers and Lifters.



"Siberian Lifter."

Fancy design, nickel plated body malleable iron.

"SIBERIAN" POKER. Either bent or straight ends; length, 20 in.

Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.

SELECTED MICA ONLY.

Prepared expressly for the Stove and Hardware Trade.

Two Grades: "North Carolina" and "Nevada."

PRICE LISTS AND DISCOUNTS SENT ON APPLICATION.

THE PALERMO MICA CO.,

115 Beekman St., New York.



DO you want Stoves and Heaters that are easily sold and

STAY SOLD? We have been very successful in designing patterns for such.

THE GOBEILLE PATTERN CO., CLEVELAND, OHIO.

— POOR STICKS.—Dorothy: "Papa, we girls have a new name for those men who call on us but never take us out anywhere."

Papa: "What is it, daughter?"

"We call them 'fireside companions.'"—Life.

MICA

ASSORTED PACKAGES.

Put up expressly for the Retail Trade.

ONE POUND—4 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$2.00	$4\frac{1}{2} \times 6$	$2\frac{1}{4} \times 8$
Wyoming	-	1.70	$2\frac{3}{4} \times 3\frac{1}{4}$	$2\frac{1}{4} \times 4\frac{1}{4}$

TWO POUND—8 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$3.75	2×3	$2\frac{1}{4} \times 4$
			2×4	$2\frac{1}{4} \times 3\frac{1}{4}$
Wyoming	-	3.20	3×3	$2\frac{1}{4} \times 4\frac{1}{4}$
			$8 \times 4\frac{1}{4}$	$4\frac{1}{4} \times 6\frac{1}{4}$

THREE POUND—12 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$5.20	$4\frac{1}{2} \times 5$	$2\frac{1}{4} \times 4$
			$2\frac{3}{4} \times 4\frac{1}{4}$	$2\frac{1}{4} \times 3\frac{1}{4}$
Wyoming	-	4.25	3×8	2×4
			$2\frac{1}{4} \times 4\frac{1}{4}$	$2\frac{1}{4} \times 3\frac{1}{4}$
			$2\frac{1}{4} \times 3$	$2\frac{1}{4} \times 3\frac{1}{4}$
			2×8	$5 \times 6\frac{1}{4}$

ABOVE PRICES NET. NO DISCOUNT

EUGENE MUNSELL & CO.,

NEW YORK and CHICAGO.

FOR MICA

Sheet, cut or uncut, Powdered and Flake,

WRITE TO

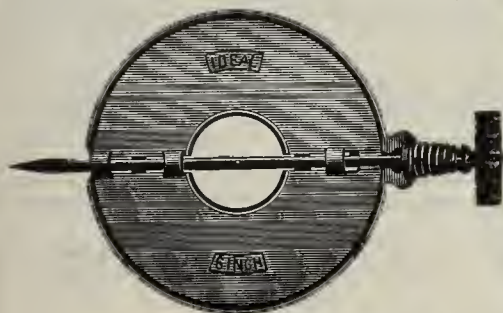
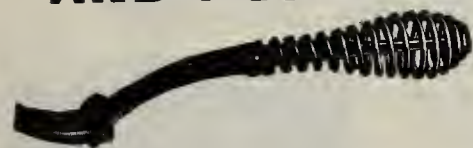
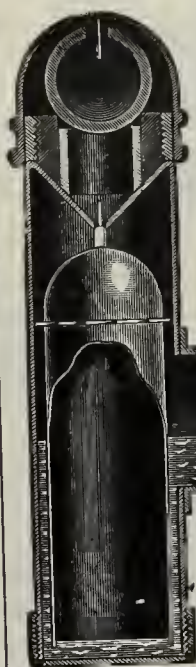
ASHEVILLE MICA CO.,

ASHEVILLE N. C.

MICA

Specially Prepared for the Stove Trade.

OHIO MICA CO., CANTON, OHIO.

NICKEL**ZUCKER & LEVETT
& LOEB CO.****PLATING**526 TO 530 WEST 25TH ST
NEW YORK, U. S. A.SEND FOR CATALOGUE OF
**NICKEL & ELECTRO-PLATING
SUPPLIES & POLISHING MATERIALS.****OUTFITS.****PIONEERS**LOW SPEED
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ANODES,
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OUTFITS****LEADERS**BUFFS.
CYANIDE POTASH,
TURKISH EMERY,
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MACHINERY.**THE HANSON & VAN WINKLE CO.**
NEWARK CHICAGO NEW YORK**BOOKS.**YOU CAN OBTAIN PROMPTLY the latest work
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lishers and Booksellers, 232-238 William St., N. Y.**IDEAL DAMPERS,
COVER LIFTERS****AND POKERS**HAVE NON-HEATING
HANDLES OF ELEGANT
DESIGN AND FINISH.
THEY ARE THE BEST.**STOVER MFG. CO.,**
164 RIVER ST.,
FREEPORT, ILLS.**GALVANIZED
STEEL and
WOOD
TANKS.**All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.**Morgan's
20th Century
Air and Vacuum
Valve**Is a positive seal against air
returning to the radiator.
Check being perpetually bal-
anced in water requires no
pressure to lift
it. A banked
fire, with
drafts closed,
will maintain
heat night and day in mild
weather. Will save four times
its cost in a single season.**MORGAN & CO.,**
40 Dearborn St.,
CHICAGO.**COLWELL LEAD CO.,**

63 Centre Street, New York.

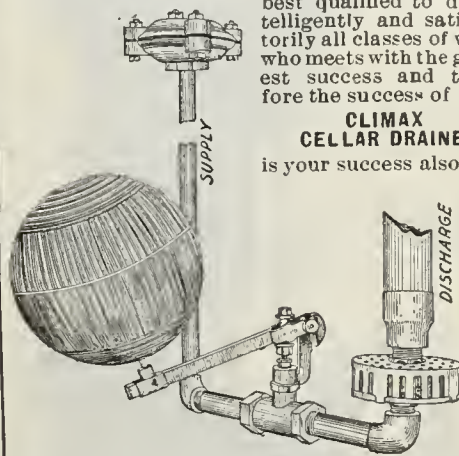
Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

Everything You Want for Plumbing.**Hand Elevators and
Dumbwaiters**made to be sold by the Hard-
ware trade. Can be placed in
position by any carpenter, Cat-
alogue free.**ENERGY ELEVATOR CO.,**

410 Cherry St., Phila., Pa.

NOTHING SUCCEEDS LIKE SUCCESS,
hence the unqualified success others have ex-
perienced with the**CLIMAX
CELLAR DRAINER**should induce you to use it also. Your customers
need This Drainer, and you should write to-day
for circular and prices, because it is the Plumber
best qualified to do in-
telligently and satisfac-
torily all classes of work-
who meets with the great-
est success and there-
fore the success of the**CLIMAX
CELLAR DRAINER**
is your success also.Years of effort have enabled us to produce a Drainer of
marvelous perfection, entirely free from stuffing boxes,
springs, packings and washers; a result not accom-
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The simplicity, reliability and superiority of the
CLIMAX CELLAR DRAINER are proverbial.

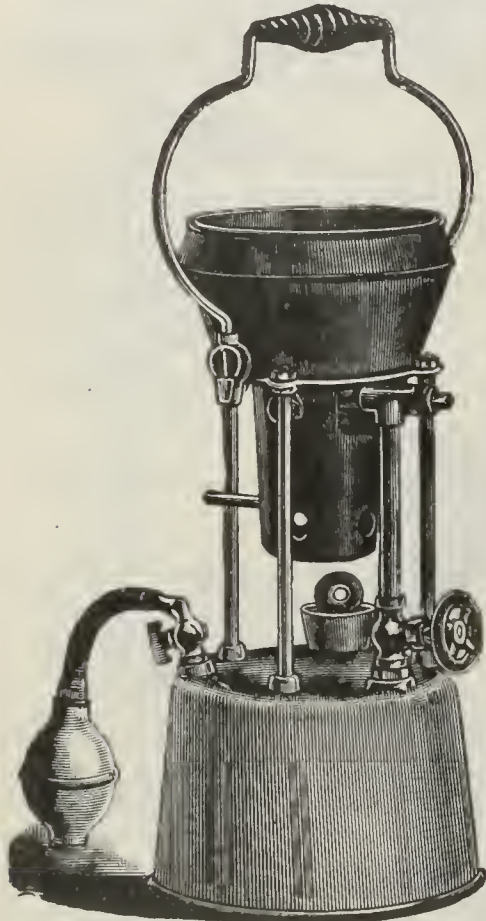
Sold by all Jobbers. Manufactured by

G. M. KEMP MFG. CO., - Baltimore.**Leather and Rubber
WASHERS,**Machine cut, at less price than can be cut by
hand. Send Sample for prices.**I. G. MARSTON & CO.,**
200 Ruggles St., Boston, Mass.

L. WOLFF Manufacturing Company,

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,
The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases
6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coll Cup.

Wrought Steel Bottom.

Patent Wire Handle.

Improved Filling Plug.

Safety Air Cock Joints.

No Cast-Iron Parts.

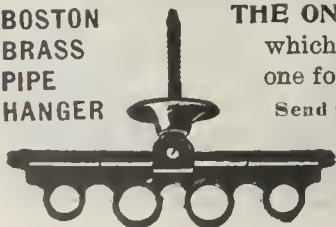
It weighs less than any other Furnace now in use.
In placing on the market

Our Improved Plumbers' Furnace
we have fully succeeded in producing *the best furnace made*. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent
upon application.

BOSTON
BRASS
PIPE
HANGER



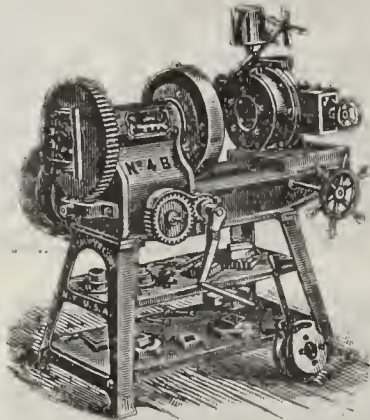
THE ONLY ONE
which requires but
one form of holder
Send for Circular.

JOSEPH H.
YOUNG.
Boston, Mass.

D. SAUNDERS' SONS,

MANUFACTURERS OF

PIPE CUTTING AND THREADING MACHINES.



All sizes 1/4 inch to 18 inch for Pipe Mill, Gas
and Steam Fitters' use. Tapping Ma-
chines for Steam-Fittings, also

Steam and Gasfitters' Hand Tools.

SEND FOR CATALOGUE.

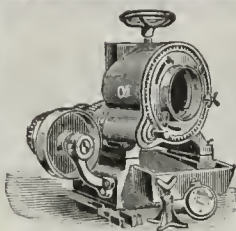
No. 4 B Machine, 1/4 to 4 inch.
Hand or Power.

No. 25 Atherton St., Yonkers, N.Y.

FORBES PATENT DIE STOCK

FOR HAND OR POWER.

Occupy less floor space, require less
power to run, more simple of construc-
tion, far cheaper than any other ma-
chine of same range.

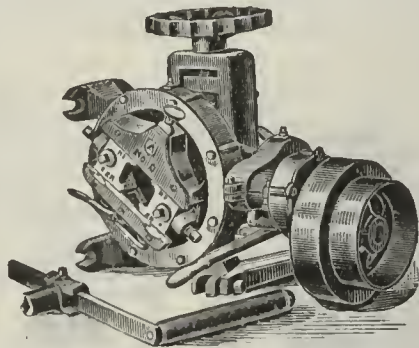


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Manufactured by

THE CURTIS & CURTIS CO., 56 Garden Street,
BRIDGEPORT, CONN.

WE BUILD A SUPERIOR LINE



of PIPE THREADING,
and CUTTING OFF
MACHINES, (Hand or Power,)
STOCKS, DIES and other Tools

For

WATER, STEAM and GAS FITTERS.

— CATALOGUE? —

THE ARMSTRONG MFG. CO.,

No. 0 Threading Machine, Power Attachment.

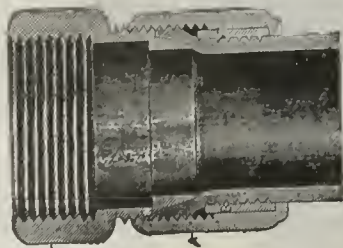
139 Centre St., New York.

BRIDGEPORT, CONN.

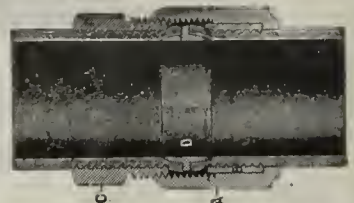
SOLDERLESS COUPLINGS

FOR

LEAD to LEAD and
LEAD to IRON PIPE.

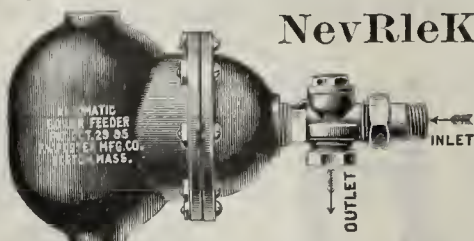


Catalogue on
Application.



THE J. & E. STEVENS CO.,
CROMWELL, CONN.

FOSTER'S NevRleK



BOILER FEEDER.

Our Booklet tells all about it.

F. W. FOSTER MFG. CO.,
12 Portland St., Boston.

ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers,
expansion tanks and boil-
ers with copper tube coils
inside for heating water
by steam.

L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.

"Simplex"

Patented
Stop and Waste Cock

Practical plumbers know how difficult it is to reverse any of the cocks hitherto made, because they are so complicated. The "Simplex" can be changed from right to left hand instantly, and CAN'T be set wrong. Interchangeable Lever. Tee Handle or Socket Head. To change from right to left or vice versa:—Take out set screw B. Reverse handle. Put set screw in hole C.

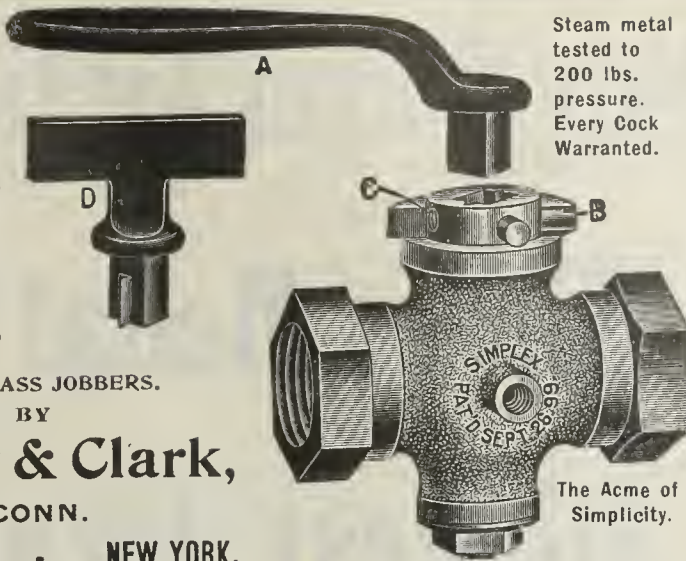
FOR SALE BY ALL FIRST-CLASS JOBBERS.

MANUFACTURED BY

Landers, Frary & Clark,

NEW BRITAIN, CONN.

Salesroom, 82 Chambers Street, - NEW YORK.



Steam metal
tested to
200 lbs.
pressure.
Every Cock
Warranted.

The Acme of
Simplicity.

We Manufacture a
Large and Well
Assorted Line of

Compression Bibbs,
Basin and Bath Cocks,
Ground Key Lever Handle Bibbs,
Beer, Ale and Liquor Cocks,
Champagne Taps. Racking Cocks,
Cooler, Refrigerator and Can
Cocks,
Bottling and Lock Cocks,
Kerosene Oil and Petroleum Fau-
cets.
Fairy Hose Nozzles, Crown Water
Filters, Towel Racks, Etc.

TIN LINED

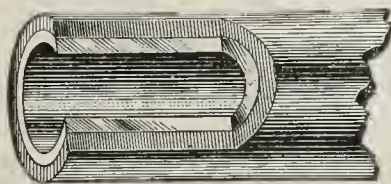
IRON PIPE.

For Pure Water.

Avoiding without extra expense all
danger of lead or brass poisoning.

LAMB & RITCHIE, Cambridge, Mass.

L. & R. PIPE.—Patented.



This lining cannot be torn from the
pipe even by bending or by hot water.

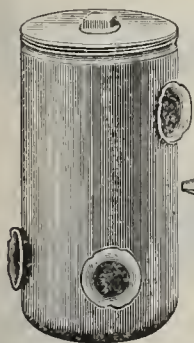
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IRON PIPE.

Made the Same Way.

The Anderson Lead Pipe Expanding Pliers.

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The only tool ever produced
that will turn out a collar on
lead traps and lead pipes.

In expanding the ends of the lead
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You should have
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tra torch or so
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the first cold
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Remember,
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back if not
pleased with
any fire you pur-
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Soil Pipe Connections.

MODEL FITTING
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Freight allowed on assorted
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Send for "A"
Catalogue
Showing large line of

Plumbers' Specialties.

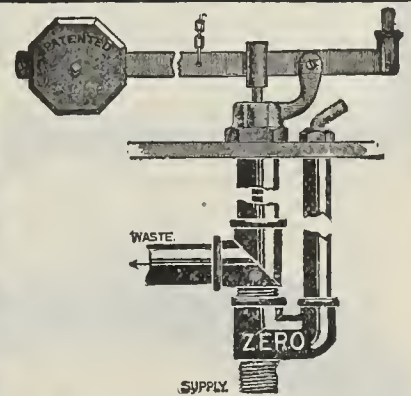
THE VANDERMAN PLUMBING
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WILLIMANTIC, CONN., U. S. A.

— PEACEMAKER: "I wouldn't fight,
my good men."

First Combatant: "He called me a
thief, sir."

Second Combatant: "And he called
me a lazy loafer."

Peacemaker: "Well, I wouldn't fight
over a difference of opinion. You both
may be right."—*Tid-Bits.*



SAVE HALF

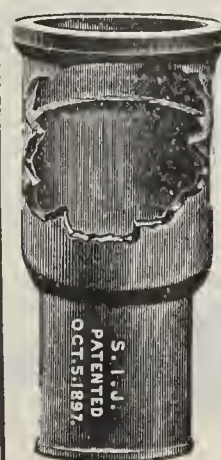
The expense of installing closets by
getting

Zero Anti-Freezing Valves.

They can be put in with half the time
and half the labor because they do not
require a pit or vault.

They are simple and durable in con-
struction—made without screws, springs
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INSERTABLE

JOINT

FOR SOIL PIPE.

Sizes, 2 to 6 inches.
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Saves labor, expense, and
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This PIPE WRENCH
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not crush, slip, or lock. All parts interchangeable.
Send for catalog showing complete line.

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The Kelsey Warm Air Generator

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Silver Medal

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Highest Award

FOR

WARM AIR HEATING APPARATUS

AT PAN-AMERICAN EXPOSITION.

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Makers of the Kelsey Warm Air Generator.

Royal Enameled Steel Ware

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Prompt Shipments. Complete line.

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Close Buying.

There are many buyers in the lines covered by this paper who are constantly hammering the market and in every way in their power endeavoring to obtain concessions in price from manufacturers and jobbers. This is sometimes done by resorting to practices which are of more than questionable propriety and inconsistent with a high sense of business honor. Those who are charged with the responsibility of buying either the raw material or the finished goods, avoiding this extreme, may at the same time look faithfully after the interests of their important department and maintain their position as close and successful buyers.

There is danger, on the other hand, that this department will be neglected. Many houses, both manufacturers and merchants, apparently do not understand not only the obligation but the necessity of purchasing goods at as low prices as are obtainable, for close buying is a necessary forerunner of profitable selling. This is generally recognized by large concerns, whether merchants or manufacturers—indeed a business is not likely to assume large proportions where this principle is disregarded. The buyer's department in large and enterprising establishments is acknowledged to be one which deserves the best attention and justifies the employment of competent talent. There are, however, many smaller merchants, and even manufacturers, who do not give proper attention to the buying of their goods. They do not appear to consider the money saved by close buying worth the time and trouble necessary to secure low prices, or they are so negligent and easy going in their methods that they do not care to make the requisite effort. Some even labor under the delusion that by paying high prices they win the good will of the manufacturers and jobbers with whom they deal. It is not necessary to point out that this is an entirely mistaken view of the matter, and while they may gain a little in this way, it is at the expense of losing much.

Manufacturers and jobbers do not accord the highest ratings to the houses paying the highest prices. They appreciate dealing with a concern run on strictly business principles, even though its purchases may be limited in quantity. Such a house is generally more favorably considered when favors are desired than the easy going concern paying higher prices. A good business man judges of the house he is dealing with largely by the business qualities shown by it. Close buying is regarded

as a sign of good management which runs all through the business. The lack of close buying is a symptom of poor management which will show itself in other directions. The seller must always watch his credits carefully and be on the alert to detect weakness in those with whom he deals. He is generally willing to extend favors when he can do so with safety, for he desires to hold trade; but, first and last, he is concerned about getting the money due him. This is simply business. Nothing tends more to insure confidence in the good management and stability of a concern than to have goods bought carefully and payments made promptly. Those who are close buyers and avail themselves of the cash discounts are held in higher esteem commercially than houses who are careless in their buying and slow in their payments.

There are many small merchants who are content as a matter of course to pay such prices as are quoted them by the few houses from whom they purchase the great bulk of their goods and without making sufficient effort to ascertain whether or not the prices are as low as could properly be obtained by a little care and attention. While the amount thus lost on each invoice is relatively small, the aggregate during the year makes it a serious diminution from the profits of the business. The trade should recognize the truth of the principle that a saving in this department is as important in a small business as in a large one. This consideration has an added force in view of the fact that buying may be taken as an illustration of the business as a whole. Good buying, good store management, good collections and good profits naturally go together. Where there is careless buying there is generally found careless management in every department.

Foreign Boilers.

At various times we have alluded to the fact that the sale of house heating boilers abroad has increased and that several American houses find it profitable to devote special attention to this class of trade. In order that a more correct idea of the outlook for business in this field may be had by American manufacturers, we begin, in another part of this issue, a three-part article on "European Heating Boilers." The article is profusely illustrated and shows all the various types, from the simplest constructions to those of the highest efficiency. These illustrations will doubtless provide acceptable information to many of our readers, although they may not desire to embody in their productions all the characteristics shown. Nevertheless, it is probable that in some of the constructions useful hints may be found. The text, in connection with the illustrations, gives the heating value placed on different characters of heating surfaces by the Germans, who more than other engineers have carefully tabulated the information gained in testing various types of heating apparatus for both efficiency and economy. These articles, we are sure, will be found of value as a review of foreign boiler construction and for reference and comparison by the manufacturers of heating goods here. From the American point of view, however, it is doubtful if the foreign constructions will be as highly thought of as those which can be secured in this market.

How to Win Foreign Trade.

Methods for securing foreign trade frequently have formed the subject of communications from our consuls in different parts of the world. All these officials agree that American manufacturers and exporters in general too often fail to use practical and common sense methods to accomplish this end. In a recent report to the State Department, United States Consul William A. Prickitt, at Rheims, France, says that he is continually receiving letters from merchants in this country requesting the names of dealers in his consular district, and that he has answered hundreds of such letters, but is sure they have accomplished very little. The inquirers do not realize the obstacles in transacting business with foreign merchants by correspondence. The difference in the money, in the measures of a quantity, and the important matters of duty and freight do not seem to be given the consideration by American merchants and manufacturers that they deserve. The consul asserts that the French merchants will not take the trouble to translate English letters into French, nor make the calculations necessary to turn dollars and cents into French money, or English measures into French, nor will they investigate as to freight and duty charges. The majority of American exporters insist upon quoting goods f.o.b. New York or other ports, instead of calculating and naming the cost the French merchants will have to pay for the goods delivered at their destinations. If the latter course was pursued, the consul is confident that excellent results could be obtained in France. At the same time, he reiterates the advice given by many consular officers and other authorities on foreign trade that the best way is to send competent representatives to the large distributing centers of the country who will solicit trade at first hand. If this course is not possible, the next best method is to engage the services of a reliable local agent who will do business on commission. Selling goods directly by correspondence, and so avoiding commissions, is plausible in theory, but it does not succeed in practice.

The Importance of Technical Education.

In a recent article on the influence of technical education upon the industrial prosperity of a country, Prof. V. C. Alderson referred to the advantages gained by Germany in recent years as a proof of the superiority of the industrial educational system followed in that country. Professor Alderson finds that the system of training in technical colleges and schools is the main source of Germany's industrial power, enabling her within recent years to become one of the great manufacturing nations of the world, and to force her way into foreign markets in competition with the United States and Great Britain. Nevertheless, he is of the opinion that the technical schools in the United States, while not equal to the German schools in point of theoretical training, excel them on the practical side, the American tendency being not only to master knowledge, but to apply it at once. It is this practical efficiency that accounts for the remarkable industrial progress of this country. With the increased facilities for technical training which are constantly being provided there is little doubt this progress will be still further stimulated and accelerated. Not only in the constant improvements which are being made in the production of iron and steel, but in their manipulation as they are transformed into the finer finished products, are illustrations to be found which emphasize the practical utility of

technical training. The American alertness in applying the discoveries of science and in adopting improved methods, which are not always simply labor saving, has much to do with the country's marvelous success in manufacturing.

Furnace Heating.

The Metal Worker has called attention on several occasions to the frequency with which furnace heating is adopted for fine residence buildings, and this fall has been no exception to the past in the number of times to which our attention has been drawn to the superior class of buildings in which hot air furnaces have been installed. In corresponding with us recently, on another subject, a prominent heating engineer stated that he thought the subject of furnace heating to be "a much more important one than heating engineers generally seem to consider it." A letter from another leading engineer includes the statement that "the furnace system of heating has been neglected by heating engineers rather more than its importance would warrant." Such opinions, expressed by engineers who are employed for consultation on the construction of extensive systems of heating and ventilation in which steam is used, are evidence of the esteem in which the furnace system of heating is held by men of broad information. We present these views for the encouragement of furnacemen and as an inspiration for the younger men who are inclined to have a higher regard for steam and hot water heating. They should study the subject of heating broadly, so that they may be qualified to recommend to their customers a hot air, hot water or steam system, whichever may best be adapted to their needs, with a perfect familiarity with all of the advantages of each system.

Agricultural Prosperity.

In spite of the partial failure of the corn crop the farmers, as a class, have enjoyed a remarkably prosperous season. According to the *American Agriculturist*, which is probably the highest authority in such matters, the wheat yield of the United States this year is worth \$150,000,000 more than that of 1900, while the shortage of corn and potatoes has been entirely offset by the higher price obtained for those products, and the crops of barley, oats and rye make up quite as large a total in amount and value this year as last. Moreover, live stock represents a value of nearly \$250,000,000 over last year. The prices of apples and other fruits, too, have risen materially. Consequently the farm products of the United States this year may be reckoned as worth fully \$400,000,000 more than last year, which was accounted a season of fair prosperity. Coming after four good agricultural seasons, it would seem that the farmers have every reason to be grateful and contented in the opening year of the twentieth century. The increase in the value of farm products during the past five years has been little less than stupendous. The value of the cereals—wheat, corn, oats, rye and barley—raised in this country from 1897 to 1901 represents an increase of nearly \$1,000,000,000 over the preceding five years and live stock has appreciated to a similar amount. Cotton growers have received about \$400,000,000 more in the past five years than in the previous five, and the agricultural exports of this country have been greater in value by \$938,000,000 in the same period. The bearing of these facts upon the general prosperity of the country is obvious, and the promise they hold forth of an active winter's business in all lines of trade is gratifying in the extreme.

TRADE WITH MEXICO.

The renewed attention to trade conditions between the United States and the American countries lying south of her borders, due in part to the meeting of the Pan-American Congress in the City of Mexico, lends special interest to a statement made by a British Consul in Mexico, which has just been received by the Treasury Bureau of Statistics. The officer in question calls the attention of his Government to the fact that in the one American country at the south with which the United States has satisfactory transportation facilities—namely, Mexico—the trade of the United States has vastly outgrown that of other nations. Fifty years ago trade with Mexico was carried almost exclusively by British houses, and such was the condition as late as 1872 and 1873, but since the opening of the Mexican Central and the Mexican National railways the United States manufacturers have increased their trade with the Mexican Republic, and the British trade is now confined to a few agencies—there being no important commercial establishment—which, by means of samples and catalogues, undertake the execution of orders. Some of the larger British firms still employ special representatives, but they cannot count on their usual customers for orders. Other houses frequently send out such incapable men that they are unable to get a single order.

The consul calls attention to certain points which he says have been much overlooked by the British traders, and it would not be inadvisable for American manufacturers to take note of the hints suggested. He says that there are over 900 different classifications in the Mexican tariff, and lists of articles that clearly specify those on which a duty exists are issued by the Minister of Finance. These can be obtained on application. More care should be taken in drawing up invoices, so that the many mistakes now found may not occur. These mistakes lead to the imposition of fines and consequent loss to the consignee.

The consul also refers to the subject of packing, to which more attention should be paid. This does not refer particularly to the outside case, but to the way in which the contents are packed in the case. Merchants or customers abroad often give instructions as to the packing of certain articles, not only to secure their safe arrival, but also on account of the duties that may be leviable on these goods. If these instructions were properly carried out a great deal of trouble on both sides would be saved.

Delay in the execution of orders is also another serious drawback to the extension of trade. Such delays, he says, several times have been the cause of important orders being sent to the United States or some European country where they can be filled at once. Another point deserving attention is the failure to give estimates or descriptions when asked for, and in this connection the absolute necessity of giving the would-be customer an intelligible description of the goods, together with the metric weights and measures, is insisted upon.

In connection with the trade of the United States with Mexico it is of interest to learn that in the last decade, from 1891 to 1901, the value of exports from this country to the republic has grown from \$14,900,000 to \$37,500,000. The rapid rate at which this trade is increasing is also illustrated by the fact that in two years it has increased in amount more than \$11,000,000. The United Kingdom, the next largest exporter to Mexico, now sends only about \$10,000,000 worth of goods to that country.

At Pittsburgh, in the case of the Pittsburgh Supply Company against the Pittsburgh Meter Company, the Circuit Court found in favor of the plaintiff. This finding was reversed by the United States Circuit Court of Appeals, and the bill of the complainant was dismissed.

Over \$7,080,000 in gold bars, the largest withdrawal from the Assay Office in one day on record, and the largest shipment to be consigned to one transatlantic steamship, left New York on Tuesday on board the "Kaiser Wilhelm der Grosse" for Europe.

THE EASTERN STOVE TRADE.

The feeling existing in the stove trade in the East is different from that which prevails in many other lines. For some time past a strong tendency has been manifest toward combinations and associations. This method of improving trade conditions and eliminating bad practices, which are sure to creep into any trade, is quite generally in favor. The manufacturers of Eastern Pennsylvania, New York City and the upper Hudson, after deriving benefit from association and frequent meetings at the Astor House, have discontinued these conferences; at least so far. No call has been issued for a meeting for some time, and while no statement has been made that the old organization ceases to exist, there is no evidence of its life. Eastern Pennsylvania, however, which has always been tenacious of the association idea, after disrupting through the flagrant violation of its rules the old association, has again reorganized on a new plan, with a paid secretary.

THE PAID SECRETARY AND THE RULES.

The workings of this association have been watched by those who are members and those who are not, with considerable interest. In operation the association have agreed upon certain rules for the classification of goods and the fixing of list prices on all new goods by a special committee. After agreeing on list prices for various goods they have also fixed the discounts which make the selling price, no restriction, however, being put upon those who desire to secure higher prices for their manufactures. Naturally these who are not members of the association, as well as some who are, desire to market their products at concessions from these prices. A part of the work of the association has been for the secretary to learn where outside manufacturers have made concessions and then to allow the members to meet them.

THE EXCEPTIONS SUPERSEDE THE RULE.

One of the larger houses belonging to the association is authority for the statement that the major portion of the sales are made at prices in accordance with the concessions reported. To have an official of the association report where concessions may be made is an advance over the old somewhat demoralizing custom of having every salesman on the road hunt out these concessions and report them. It is probable that the new method has a somewhat less demoralizing effect, besides the advantage of putting all who are allied in their interests on practically the same level by furnishing a record of the concessions that may be made. Close observers of the general results are of the opinion that during the season when other manufacturers of cast iron goods were securing good profits, the stove manufacturers in Eastern Pennsylvania, New York City and the upper Hudson have failed to secure as profitable prices for their goods.

VIOLATION, OPEN MARKET AND REDUCED PROFITS.

The charge is made that some manufacturers high up in association affairs have no hesitation in making special prices or in placing on the market attractive new goods without consulting the Price Committee as to what list prices they shall use, but independently adopting a list price of their own making, sometimes lower than, or similar to, the regulation list. Thus, at the same discounts their more elaborately equipped goods are sold at figures that increase their attractions. In consequence there has been what may be generally termed an open market, which has been by no means a disadvantage to the buyer of stoves. It is possible that the dealers are influenced more or less by the low price they have secured from the manufacturers and have retailed their stock with a smaller margin of profit than is good for their bank account or the new 60-day payment rule of the National Association.

TENDENCY TO INDEPENDENT ACTION.

The natural outgrowth of this condition is generally toward independence of action by individual plants, untrammelled by restrictions that may be more beneficial to competitors than an independent course would be to a house that is willing to enter into a contest for the survival of the fittest. Much has been said in favor of

associations and many benefits may be derived from them. Nevertheless, it is evident that a stove manufacturing business, conducted with a high order of intelligence that will utilize all progressive methods in the course of production and exercise vigilant care in the details of its administration, can be successful and derive the special benefits which attend individual enterprise, and without being a menace to the best interests of the trade as a whole.

VIOLETIONS DESTROY ASSOCIATIONS.

There are many elements and factors in the stove trade in the territory under consideration which seem to be irreconcilable. If a continuation of the association is desirable it will be necessary for a stricter adherence to agreements than heretofore has been customary. In all bodies there are those who fail to see how their interests can be served by adherence to the rules and their violation is always a source of annoyance. There is still another class who are shrewder and take advantage of the rules for their personal gain in a most exasperating manner. These offenders are quite generally noted for their suavity in ignoring any restrictions on their actions, rather than for their loyalty to either the spirit or the letter of their agreement. These are the conditions which may be said to have killed the interest in many once beneficial associations. They are also said to be responsible for the hesitancy on the part of those who favor the association to make any endeavor to renew life in the old association or to form a new one.

A LEADER OR A GOVERNING BOARD?

Many are of the opinion that a strong man is necessary to take the lead in the work of reorganization. This would heap an immense deal of work and responsibility on one man, and from the fact that such a leader is not forthcoming, it is probable that the idea is entertained that such a demand is unreasonable. If the association fails for the lack of such a man measures might be taken for the operation of an association under a board of governors cognizant of the sharp practices of the various members, who would be more powerful in treating with offenders than a single officer could be. It is possible that such a board of governors, utilizing the Pennsylvania idea of a paid secretary, could bring order out of the chaos into which the Eastern stove trade seems to have passed. In connection with such a movement there would probably be little difficulty in securing an official thoroughly familiar with every detail of the stove business, and also with the practices of the various manufacturers who engage in it in the territory which he is employed to cover. A fund of official information could in this manner be brought to the attention of the Board of Governors, and it would then rest with the whole association to carry out the measures recommended by them.

HEATING IN EUROPE.

BY AN AMERICAN ENGINEER.

The first impression an American engineer receives of European methods of heating, be it with stoves, warm air furnaces, steam or hot water, is that they are far behind those used in the United States. This is due to the fact that they use clumsy and unsightly stoves, crude registers and rough radiators, while in the piping there is a lack of that neat fitting which one is accustomed to see in America. They bend their pipes, using very few fittings, and where these do come into use they are clumsy flanged devices. In the smaller sizes of pipe, say under 2 inch, they use wrought iron fittings, which are seldom standard in size.

But a closer study discloses the fact that the Europeans generally, and the German engineers particularly, are far ahead of the American in many ways. For instance, they figure more exactly; their apparatus is built in every case for the particular work expected of it, the kind of fuel and the attention it is to receive. Hence their apparatus is more economical in the use of fuel, it needs less attention and admits of the most precise regulation, a result seldom obtained in the United States, where economy in use is not sought so much as small first cost, in consequence of the hustling

competition that may well be termed "that insanity to get a contract."

The European engineer is more concerned about his reputation and results than about his profits, for the European property owner does not forget, as does the American, that he was deceived, nor can an engineer whose work defaults hope to continue in business as he can in America, where, according to Barnum, a "sneaker is born every minute."

Every system of warm air furnace heating has in connection a system of ventilation. Hence a given number of changes of air per hour are easily secured. The warm air flues are invariably constructed of tile or brick and with the shortest horizontal travel. The warm air is introduced in all cases more than head high, and the police and insurance regulations are so strict that a warm air furnace heating apparatus is as safe and healthful and costs as much as a low pressure steam heating apparatus.

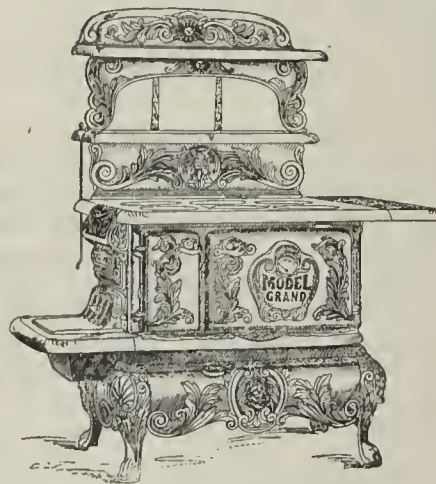
For steam or hot water heating apparatus the regulating and safety appliances used are nearer the point of perfection in Germany than anywhere else in the world. The open stand pipe used on steam boilers makes an explosion practically impossible.

The European engineer is far ahead of the American in making tests and records of results in all kinds of work, and when he makes a test he promptly gives it to the profession generally through the trade papers.

The fact that almost every German engineer speaks English and French, or at least is able to read those languages, enables him to keep in touch with what is going on in the world outside of Germany. Being very adept at copying, the German engineers are not slow to profit by any advance made in America, England or France, and with the experiments and tests made in their own thorough, painstaking way, they manage easily to keep ahead of the balance of the world.

New Model Grand Range.

One of the latest novelties which have been added to their already extensive assortment of specialties by the Barstow Stove Company of Providence, R. I., is the



New Model Grand Range.

Model Grand range, a general view of which is presented herewith. As will be seen, the exterior is ornamented in a most effective manner, the name plate forming a conspicuous feature of the treatment of the oven door. Constructively the range embodies the latest improvements. The main top is entirely devoted to cooking space, this being brought about by an ingenious arrangement of the smoke flue. The oven is fitted with a rack, which can be pulled out to its full width. By means of a simple locking device it remains rigidly in position, thus affording opportunity for readily handling baking pans, &c., without the necessity of reaching into the hot oven. The rack can then be pushed back into position, while at the same time it is as readily removable as the ordinary rack. It is plated with aluminum, so that it can be easily cleaned. Another feature of the new Model Grand is

the ash pan, which catches and holds all the ashes in the fire box. By means of the automatic lift dust guards the pan is removable nearly on a level, thus differing from the ordinary pan, which has to be lifted out at an angle of 45 degrees. The handle is so placed above the surface of the ashes that it can be readily reached when the pan is full. Still another point to which the company draw attention is the nickel trimmings of the range, all of which are detachable for the purpose of cleaning or repairs.

ODD PLATES.

THE president of the Auer Register Company, Toledo, Ohio, is making a business trip through the East in the interest of their special construction of Side Wall Registers. These Registers are especially adapted for use in vertical heating flues and can be adjusted so that all of the heat can be thrown into the first floor room, or a portion of the ascending hot air current can pass to the upper Registers.

THE daily press of New England reports that Richard E. Warner of the Stove manufacturing concern of White-Warner Company, Taunton, Mass., has been nominated for Mayor by the Republicans of that city.

CHARLES C. HEATH & Co., Baltimore and Philadelphia, will greatly extend their Philadelphia store, which, under the management of Henry Swartz, has been very successful. It is reported that a large new warehouse now being erected in the Second Street District will be taken by them and stocked with a full line of Stoves, Heaters and Ranges.

A PRETTY FOLDER which is being sent out by the Michigan Stove Company calls attention to the Art-Garland Parlor Heater, which they are offering in three sizes plain and one size with oven. The Stove is of handsome appearance, nickel being liberally employed in its ornamentation, and has the company's reflector top. The Stove is surmounted by an ornament of artistic design finished in gold. Other attractive features include large hot air circulating flues, extra heavy grate and fire pot, double swing cover, shaking and duplex grate, and patent screw draft register in the ash pit door. The Art-Garland is designed for burning hard coal or crushed coke, and every Stove is a double heater. The company are constantly in receipt of very complimentary letters relating to their goods. In their mail recently was a letter from a customer in Loda, Ill., in which he refers in very high terms to the excellence and satisfaction of the Garland goods, and to the pleasure derived in handling the company's line of Stoves and Ranges.

A LITTLE FOLDER which is being sent out by the Symonds Mfg. Company of East St. Louis, Ill., calls attention to what is known as the Symonds Register, which may be readily opened with the foot. Directions are given to the tinner and carpenter for installing the Registers, and tables are presented showing prices, weights and dimensions. The manufacturers claim for the Register that it protects the wall from discoloration, deflects the air further into the room, is easy to operate even in the dark, requires no special pipe or box patterns, is readily kept clean, necessitates no cutting of the carpets, is graceful in design and unsurpassed as a foot warmer.

THE management of the Estate of P. D. Bockwith of Dowagiac, Mich., are constantly in receipt of letters from customers testifying in the most flattering terms to the merits of the Round Oak Stoves, Ranges and Heaters. In their mail not long ago the manufacturers found a letter from a customer in Elkhart, Ill., to the effect that he had been in the Stove business for 35 years and had handled a number of good Ranges, but stated that the Round Oak Steel Range was the most perfect one he had ever seen, and since handling it his trade had steadily increased. He laid special stress upon the workmanship, weight and handsome appearance of the Range as attracting much attention, and, being carefully fitted and constructed, gives surprising results in the way of baking with a comparatively small amount of fuel.

THE PORTLAND STOVE FOUNDRY COMPANY of Portland, Maine, are offering the trade what is known as the Im-

perial Atlantic Oak, an attractive Parlor Heater, intended for using wood or coal as a fuel. The construction is such as to render it easily managed, and the claim is made that it will keep a fire continuously and economically. It is made with return flue, has brick lined fire pot and is referred to as powerful in operation.

THE GATE CITY STOVE WORKS is the name of a concern who have just been incorporated, at Catlettsburg, Ohio, for the purpose of placing upon the market a new Gas Stove known as the Wilson. The incorporators are Messrs. McCloskey, Wilson and Kinner, who for some time past have held the patents on the Stove, and who have now rented the Kirsh Building on Main street for the purpose of carrying on the new business. We understand that the Foster Stove Company of Ironton are to make the different parts of the Stove, which will be assembled by the new concern at their factory and made ready for the market.

THE JAMES SMART MFG. COMPANY, LIMITED, Brockville, Ontario, Canada, manufacturers of Perfection Stoves and Ranges and high class heating goods, are sending to their friends a nicely finished brass edged foot rule. The name and address of the company are inscribed on one side and on the other is printed a recommendation of the Kelsey Generators, for which the concern are the Canadian agents.

THE STRICKLER STOVE COMPANY is the name of a concern recently incorporated at Keokuk, Iowa, with a capital stock of \$24,000. The incorporators include Henry and A. S. Strickler, H. W. Huiskamp and A. E. Matless.

THE WASHINGTON FOUNDRY COMPANY, who were incorporated last summer at Spokane, Wash., with a capital of \$5000, are busily engaged meeting the demands of a growing business. While the force of hands at present employed is comparatively small, when considered in the light of other Stove plants, the management are progressive and pushing and feel that, in course of time, they will build up a large trade.

THE PENINSULA STOVE COMPANY, Detroit, Mich., have been sending out to customers a display card entitled "The Family Tree of Greatest Oak, and the Cause of Its Growth." The picture represents an oak tree of immense size growing in a forest, the giant roots extending in many directions and partially concealing a Stove plant of large proportions. Resting upon the limbs of the tree are several varieties of Oak Stoves, including the Peninsular Double Heater and Hot Blast, the Oak Peninsular Hot Blast Smoke Consumer, and two styles of a low priced Oak Heater.

THE FRONT RANK STEEL FURNACE COMPANY of 2301 to 2309 Lucas avenue, St. Louis, Mo., have issued a very neat 28-page pamphlet illustrating and describing the leading specialties which they manufacture in the way of heating apparatus. The prime object of the little work is to present in a simple and comprehensive way the subject of heating the home with a Warm Air Furnace. The merits of the Front Rank, which is made in several styles and varieties, are set forth in a way to interest the dealer as well as the house owner. Numerous tables show the sizes in which the heaters are made and give dimensions of various parts. One of the tables is devoted to a price-list of Registers finished in black or white japan. An interesting feature is a series of half-tone reproductions from photographs of residences heated by means of Front Rank Furnaces.

AYLING BROS., manufacturers of the A. B. Stove Polish, with main office and works at 8 to 14 Haddon avenue, Chicago, are meeting with good success. They say that this season's sales are the largest since they commenced business in 1881. The firm have opened a branch office in Milwaukee, Wis., at 486 Mitchell street, in charge of R. J. Koch, where they carry a stock, making deliveries direct from that branch.

THE HENRY N. CLARK COMPANY, Boston, Mass., are sending to the trade circulars of a timely character relating to heating apparatus. One shows a Kerosene Oil Heater, which has a cast iron base supporting a brass oil font, and having a burner with a 10-inch wick. The

upper part is made of planished iron, perforated, and is furnished with a handle for carrying. The Fire King, presented in another circular, is a box Stove made to burn wood, from 18 to 36 inches long. The Pearl is an oval wood air tight, having a cast iron top and bottom and made to burn wood from 13 to 23 inches long. A six-page folder is devoted to a special oval all sheet iron Air Tight Stove and the Rival Oak Stove.

THE ADAMS COMPANY, Dubuque, Iowa, are distributing Catalogue No. 7, devoted especially to their Hardware Specialty line. It illustrates Diamond Extension Flue Backs and Front Grates, Diamond Adjustable Cook Stove Damper, Diamond Stove Pipe Damper, Diamond Vise, Adams Register, Barrel Truck, Gradometer, &c. They have recently added several new articles to their line.

THE J. D. SMITH FOUNDRY SUPPLY COMPANY, proprietors of the Cleveland Facing Mills, are erecting a large addition to their extensive plant at Cleveland, Ohio. Warehouse capacity for machinery and supplies has been increased by leasing the five-story building at 36, 38 and 40 South Water Street, in same city.

THE S. OBERMAYER COMPANY of Cincinnati and Chicago, dealers in Foundry Supplies, will open a branch house in Pittsburgh, where they will carry in stock a full line of equipment for iron, steel and brass foundries. A building has been secured, 40 x 100 feet, with yard room of the same size, and the building will be extended to 80 x 100 feet. William Fitzpatrick, already well known to the Pittsburgh trade, and A. Rosenberg, from the Cincinnati plant, will have charge of the Pittsburgh house.

The Improved Star Nail Puller.

The Atwater Mfg. Company, Plantsville, Conn., are putting on the market the improved Star nail puller, shown in the accompanying illustration. The feature of the new puller is the small amount of travel at the top, which on a puller measuring 19½ inches high is less than 2 inches, which does not leave the arm bent so as to interfere with a strong pull. The puller is of truss construction, self opening, no springs being used, and, it is stated, is always ready for use. There are no slots or bolts in the foot to wear or become loose, it consisting of two cheek pieces, one riveted on each side of the jaw and a foot which operates on the outside of the jaw having a downward motion, which, the manufacturers state, tends to push the jaw under the nail head instead of lifting. On the inside of the foot the part working on the jaw has a concave face which fits into the convex outside of the jaw, locking the foot and jaw and preventing any side motion. The construction of the truss makes a convenient place for the hand out of the way of the ram, and also gives a firm grip to prevent



The Improved Star Nail Puller.

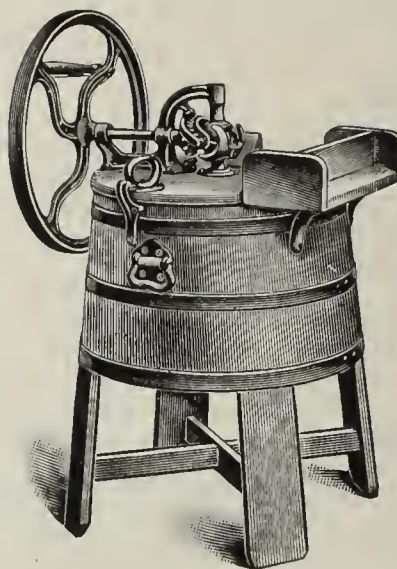
twisting on the nail. The pullers are made in two sizes, large and small, oil tempered, finely finished, and wrapped in oiled paper.

INCORPORATION papers have been taken out for a Paint company, known as the Orr, Dean & Barry Company, successors to the Orr & Abbott Paint Company, Columbus, Ohio. The officers of the new company are as follows: President, Oliver Orr, Columbus; vice-president, Geo. M. Gray, Coshocton, Ohio; secretary, Geo. Barry, Columbus; treasurer, H. Clay Dean, Columbus; superintendent, B. B. Naylor, Columbus. Mr. Orr was one of the original owners of the Orr & Abbott Paint Company, who were established in Columbus in 1879. Messrs. Dean and Barry have been traveling salesmen for the Orr, Brown, Price Drug Company of Columbus,

the former for the past 13 years, and the latter for the past 11 years. Mr. Naylor is a practical Paint maker, and has a wide experience. Geo. M. Gray is engaged in the retail and wholesale Hardware business in Coshocton. The company will continue to manufacture the high grade Liquid Paint that has been on the market for a number of years. Everything is now being made ready for the active prosecution of business, and salesmen will start out on the road within the next few weeks.

The Ocean Wave Washing Machine.

Voss Bros. Mfg. Company, Davenport, Iowa, are offering the washing machine shown herewith. It is made on the rotary, reciprocating plan, the reciprocating



The Ocean Wave Washing Machine.

ing motion being imparted by a tilting rack. The rack is engaged by a pinion on the fly wheel shaft. As the fly wheel and pinion are revolved the rack is tilted in a position to alternately allow the pinion to travel on the top and bottom sides of the rack, to impart a reciprocating motion to the interior working parts of the machine. The manufacturers remark that all friction is practically eliminated by having no sliding motion to the driving mechanism, also that the machine is practically noiseless. The machine is constructed of heavy Mississippi cypress throughout, corrugated sides and bottom, with three heavy flat iron hoops, well painted and varnished, heavy hinges, convenient fastening, &c. The fly wheel is fastened to the shaft by means of a hook or key, which can be readily removed and the wheel taken off, which will make the machine lighter to carry, also relieving

the hinges and cover of its weight when opening the cover. It is explained that the wood work being finished with the best paints and varnishes, the iron work with japan, and the fly wheel in wine color, the machine is attractive in appearance.

CHICAGO SOLAR LIGHT COMPANY, Department 32, Chicago, Ill., issue a catalogue of the Nulite Incandescent Vapor Gas Lamps, which are referred to as burning about 94 per cent. of air and 6 per cent. of hydrocarbon gas, making a pure, steady, strong and economical light. The catalogue illustrates the line of these Lamps which the company are making, including Wall, Table and Student Lamps, two, three and four light Chandeliers, Indoor and Outdoor Arc Illuminators, Street Lamps, &c.

The Knight in the Window.

The knight in the show window of Morley Bros., Saginaw, Mich., has attracted much attention and favorable comment. His feet and body were constructed in the tin shop of the store from IC roofing tin, the arms being formed of galvanized conductor elbows. The shield was cut from the cover of a dripping pan. To form the head and neck respectively a 3-quart tin milk kettle was used, and in this was put a No. 5 football players' helmet with a gauze face. The sword was made of a No. 1 drill rod with a No. 8 hog scraper for handle. The entire figure was covered with one coat of



The Knight in the Window.

aluminum and gold bronze paint. This window exhibit was prepared by F. L. Kalde, a retail salesman in the store.

Stove and Hardware Dealers.

ALTHOUGH he has had a vacation for 44 months, as he puts it, J. Sydney Smith is well remembered by the Stove and House Furnishing Goods trades of the New England States, among which he traveled for many years as representative of one of the leading Stamped Ware houses. Mr. Smith dropped in at the Boston office of *The Metal Worker* to say that he has recently made a little trip of one week around the circuit to renew old acquaintances, and incidentally to seek additional outlet for the product of the manufacturing establishment of which he is now the president and general manager. Mr. Smith's old friends in the trade will be glad to know that he has made a success of the J. Sydney Smith Mfg. Company of Weymouth, Mass., by running it on a strictly moral plan. The entire force of his factory, we are informed, avoid the use of tobacco and intoxicating liquors, and regularly attend church on Sunday. Mr. Smith makes it a point to keep in close touch with every employee, and is able to vouch for their conduct, both as workmen and members of the community. The output of his factory consists of Hand Forged Solid Punches and Chisels for tinsmiths and Plumbers' Calking Irons, and, we are advised, the factory is now running to its full capacity.

RUMAGE, MALONE & COOPER is the style of a new concern who have lately opened up in the Hardware, Stove, Tinware, Agricultural Implement and Sporting Goods lines at Hobart, Oklahoma. They will carry on a wholesale as well as retail business.

J. MANGAN & SONS, retailers of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c., Beresford, S. D., have incor-

porated under the style of the Mangan Hardware Company, and on January 1 next will assume and continue the business. They purpose enlarging their facilities so that they may be in a better position to look after the requirements of their patrons.

CULLER BROS. have lately opened up in business at Perrysville, Ohio, handling a stock comprising General Hardware, Stoves and Furnaces, Farm Implements, Paints, Varnishes, &c.

GRAY & BENNETT have opened up a new retail business at Flandreau, S. D. They will carry a full line of Builders' Hardware, Stoves, Tinware, House Furnishing Goods, &c. They will also conduct a department devoted to hot air, steam and hot water heating and ventilation.

ROLLMAN Mfg. COMPANY, Mount Joy, Pa., are sending out a postal folder, calling attention to their Rollman Apple Cutter and Rollman Cherry Seeder.

ACCORDING to advices from Pittsburgh, some of the leading manufacturers of Lamps have set on foot a movement for a consolidation of the Lamp factories of the country, with a capital of about \$10,000,000. This is the second attempt to form a combination in that trade. It is understood that the promoters will endeavor to avoid the obstacles which prevented the successful consummation of the scheme in the past. Interests identified with the Pittsburgh Lamp & Brass Company are said to be prominent in the present negotiations and five or six leading concerns are reported to have signified their willingness to join the proposed combination. It is expected that the organization, if successful, will not be definitely accomplished until some time next year, although the promoters are now actively working to perfect their plans.

THE partnership of Rennie & Johnson, trading under the firm name of the Linwood Stove & Tin Company, Marcus Hook, Pa., has been dissolved by mutual consent. The firm were composed of John W. Rennie and Benjamin Johnson, Jr.

J. J. CRONAN & Co. are making a special push for a share of the Stove and Range business of New Haven, Conn., by a fine stock and display at 6 Church street. They also do plumbing, steam and hot water heating, and have a well equipped tin shop.

THOMAS K. NIEDRINGHAUS of the National Enameling & Stamping Company's St. Louis branch was a visitor in New York City this week.

THE WHITTAKER-WEBER TINWARE MFG. COMPANY, North St. Louis, Mo., are about to increase their capitalization from \$100,000 to \$250,000. Early in the new year they will occupy a new \$125,000 addition to their present quarters at Second and Talcott streets. The company have enjoyed a surprising growth in the Tinware and Galvanized Iron and Steel Ware lines.

THE LEONARD REFRIGERATOR COMPANY, Grand Rapids, Mich., are building a large addition to their establishment corner of Market and Fulton streets. The new building will be connected with the present plant by bridges, and the two buildings combined will form one of the largest Refrigerator establishments in the country.

"Compressed Air" and "Mechanical Movements" are the titles of two new books which have recently made their appearance, written by Gardner D. Hiscox, an engineer of well-known ability. "Compressed Air" is described as a complete treatise, and it will be interesting to many who desire to use compressed air for lifting water, operating pneumatic tools, for cleaning castings and for other purposes. "Mechanical Movements" will be found a valuable book of reference in many shops where machines must be devised for various purposes. The task will be materially simplified by referring to the many different characters of mechanical movements and motive powers adapted for special requirements, as explained and illustrated in this work.

In Germany new houses are being supplied with floors made of compressed paper. They are soft to step on, and having no cracks of any kind harbor no dust.

European Heating Boilers.

BY CHARLES F. HAUSS.

IN THREE PARTS. PART FIRST.

Steam and hot water heating is more of a science in Europe than in America. Though America excels in foundry and machine shop practice, she fails to give

boiler is built for a particular purpose, fuel and condition. For instance, a boiler built for low pressure or open tank hot water heating is never used for middle or light pressure hot water heating, or *vice versa*. And the same rule applies in steam heating. To use the words of one of the pioneers in the boiler business in America, "They never prescribe a remedy without a reason." Each type of boiler is made in many sizes, with the grate and fire

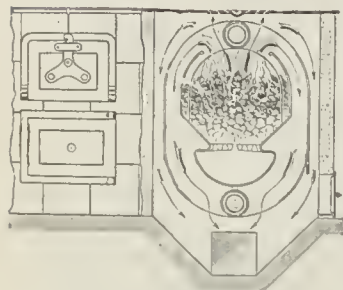


Fig. 1.

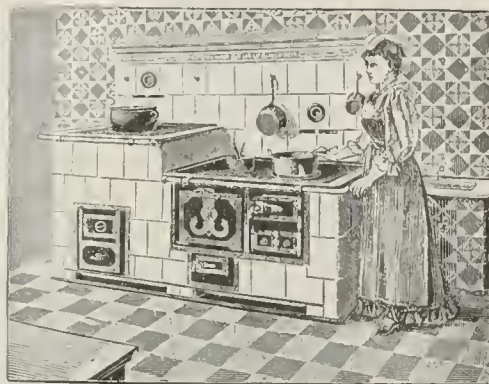


Fig. 2.

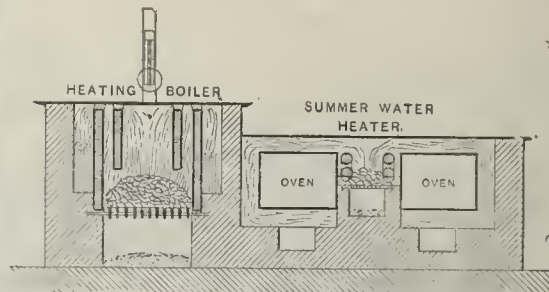


Fig. 3.



Fig. 4.

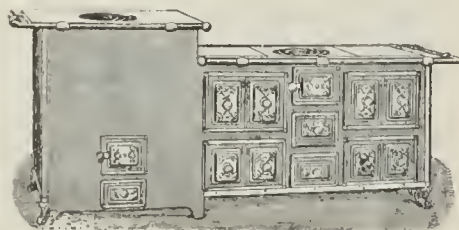


Fig. 5.

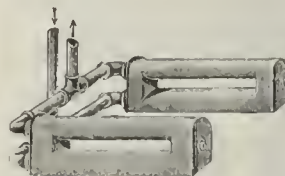


Fig. 6.

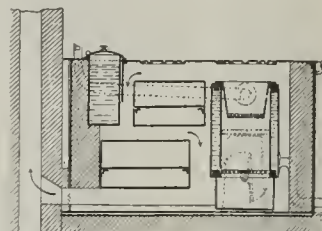


Fig. 7.

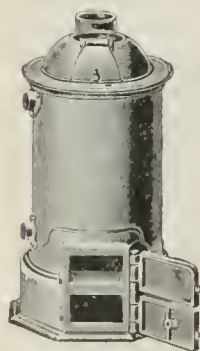


Fig. 8.

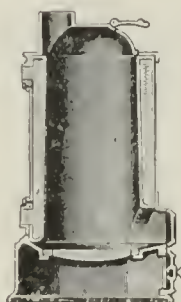


Fig. 9.

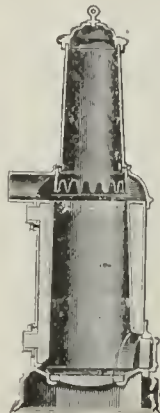


Fig. 10.

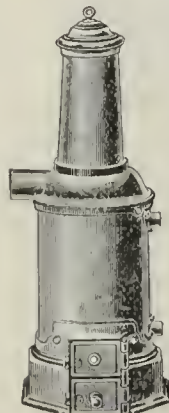


Fig. 11.

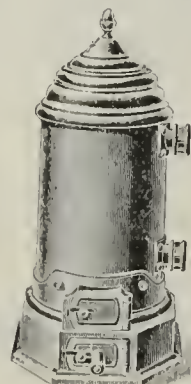


Fig. 12.



Fig. 13.

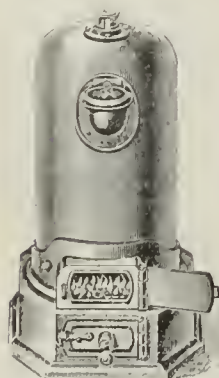


Fig. 14.

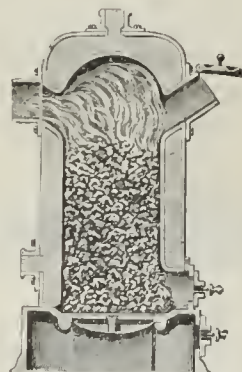


Fig. 15.



Fig. 16.

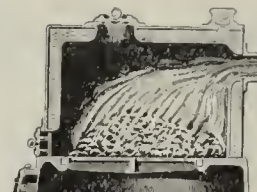


Fig. 17.

EUROPEAN HEATING BOILERS.

the many details that help to make up a heating apparatus the earnest thought and time that the slow going but thorough German devotes to it. It is to the German that the other engineers of Europe look for their suggestions and ideas. Hence many parts of heating apparatus made in England and other European countries were inspired by the Germans.

Though, at first glance, the following illustrations may not impress the reader favorably, the writer is sure that a close study will convince the reader that each

surfaces accurately figured. Hence it is not necessary at any time to use a boiler that is much larger than is wanted.

One class of hot water heating that is receiving a great deal of attention just now, and that is being extensively installed, is that of heating a flat or small house from a boiler built into the kitchen range, as shown in Figs. 1 to 7. Fig. 1 shows the Meyer boiler, made up of cast iron sections, connected at the top and bottom with wrought iron slip nipples, which are made

in eight sizes, with from 22½ to 56 square feet of fire surface in two sizes of section, and rated to supply 2600 heat units per square foot of fire surface, which is equivalent to 14 square feet of two-column direct radiation per square foot of fire surface, and containing an average of 2 pounds of water per square foot of fire surface. In this boiler, which has the grates cast on the sections, the fire passes upward, striking the range top, then downward on each side through the side flues into the sub-base, which acts as the entrance to the chimney flue.

Fig. 2 shows the Warns, Gaye & Block Telescope

boiler has a fixed grate and is intended for use in combination with the cooking range, as shown in Fig. 3. The smaller fire pot on the right is intended for use in summer or when it is desired to use the bake ovens. Fig. 5 shows this same range with steel casing.

In Fig. 6 is shown the red metal water back used for heating water for domestic purposes in the summer. The claim made for it is that, being composed mostly of copper, it will not fill up with scale as rapidly as would a cast iron water back.

Fig. 7 represents the Liebau boiler, having an adjustable grate, which can be set at three different heights,

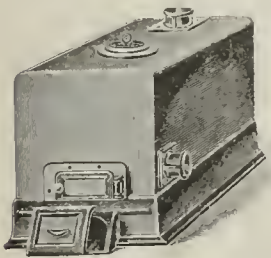


Fig. 18.

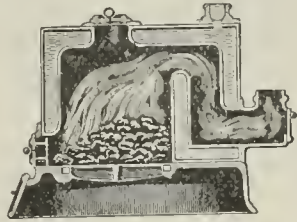


Fig. 19.

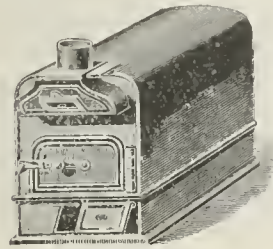


Fig. 20.

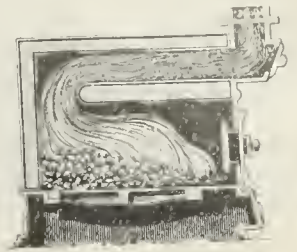


Fig. 21.



Fig. 22.

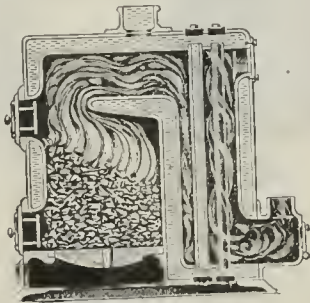


Fig. 23.

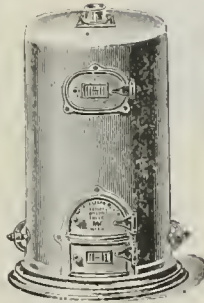


Fig. 24.

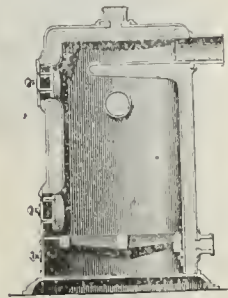


Fig. 25.

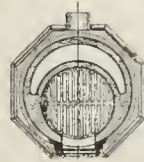


Fig. 26.

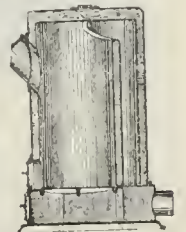


Fig. 27.

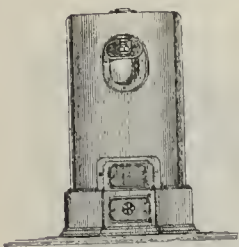


Fig. 28.



Fig. 29.



Fig. 30.

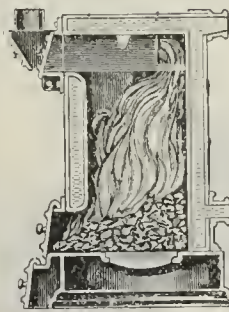


Fig. 31.

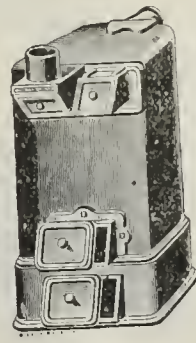


Fig. 32.

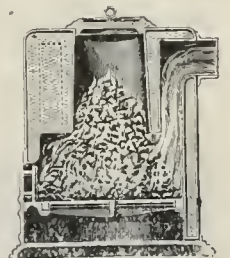


Fig. 33.

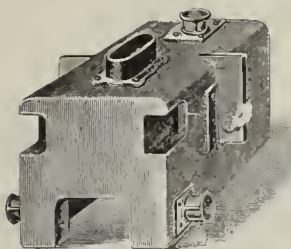


Fig. 36.

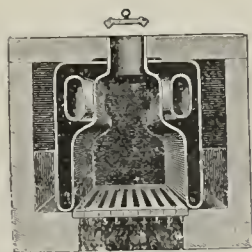


Fig. 37.

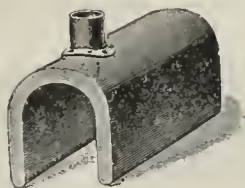


Fig. 38.

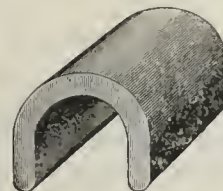


Fig. 39.

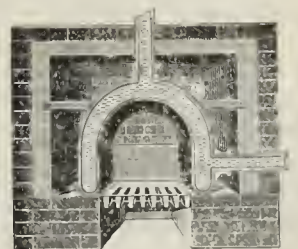


Fig. 40.

EUROPEAN HEATING BOILERS.

boiler, bricked up in a tile range, Fig. 3 presenting a sectional view and Fig. 4 the boiler itself. It is made in 13 sizes, ranging from 17 x 17 x 20 inches to 30 x 30 x 33 inches outside dimensions, with from 11 to 59½ square feet of fire surface, rated to supply, for the inside or direct surface, 4500 heat units, and for the outside or flue surface 2600 heat units, per square foot of fire surface, equal to 24 and 14 square feet of radiation and containing about 2 pounds of water per square foot of fire surface. The metal, which is 5-16 inch thick, is wrought iron, welded or brazed together, so there are no rivets used in its construction, yet it withstands the hydraulic pressure of 90 pounds per square inch demanded by the German Government. This particular

thus requiring but one fire pot for summer or winter use. It has practically the same proportions as the boiler shown in Figs. 2 to 6.

The Victoria boiler, which is the simplest type of straight fire pot boiler, is presented in Figs. 8 and 9. It is made in ten sizes, with from 3 to 12 square feet of fire surface. Being what is termed "contact" surface, in that it comes in direct contact with the fire, it is rated to supply 7200 heat units per square foot of fire surface under best conditions, which means 36 square feet of direct cast iron two-column radiation per square foot of fire surface. Figs. 10 and 11 show this same boiler with a magazine.

Figs. 12 and 13 illustrate the cylinder boiler, which is

of the same general type, except that the fire pot gets smaller nearer the top and the water space increases correspondingly.

In Figs. 14 and 15 is given what is the best known and most used type of round fire pot boiler, the dome or dome top boiler, made in 18 sizes, with from 4 to 31½ square feet of fire surface and rated to carry from 144 to 1134 square feet of radiation. It ranges from 13 to 30 inches outside diameter and from 21 to 60 inches in height, is made of 5-16 and ¾ wrought iron (welded), and is provided with a deep fire pot and magazine feed door; also with screw draft openings similar to those used on the American oak stoves.

Figs. 16 and 17 represent a trunk boiler, a plain rectangular box, with top feed and direct draft, designed for heating greenhouses, made in nine sizes, all 21 inches high and from 18 x 18 to 24 x 47 inches wide and long, and having from 8 to 21 square feet of fire surface, rated to supply 33 square feet of radiation, or 6000 heat units, per square foot of fire surface per hour. Figs. 18 and 19 show the same type of boiler with a return flue,

with quarter moon diving flue, is illustrated by Figs. 26, 27 and 28. It is made in ten sizes, with 16 to 62 square feet of fire surface and rated to carry 448 to 1750 square feet of radiation, based on each square foot of fire surface supplying 5000 heat units per hour. This boiler contains about 3¼ pounds of water per square foot of surface.

Figs. 29 and 30 show the Planet boiler with and without magazine, which, except for the arrangement of the sliding feed door, is practically similar to Figs. 8 to 13.

Figs. 31 and 32 represent the Derby boiler, which is flat in front and round behind, with the magazine door and smoke flue side by side, so that the flue plate inside forms a sort of a return flue boiler. It is made in 24 sizes, with from 3 to 23 square feet of fire surface, rated to supply from 100 to 760 square feet of direct radia-



Fig. 41.

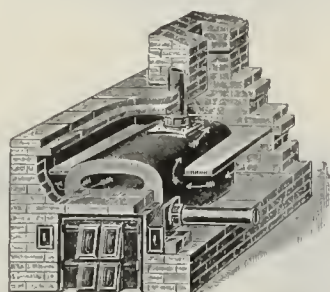


Fig. 42.

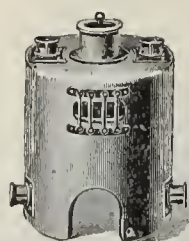


Fig. 43.

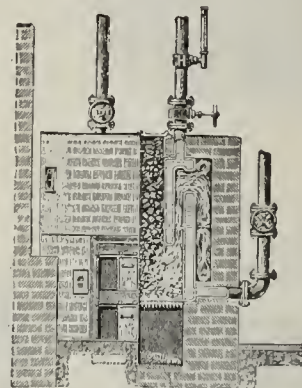


Fig. 44.

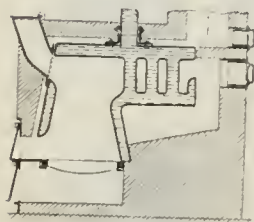


Fig. 45.

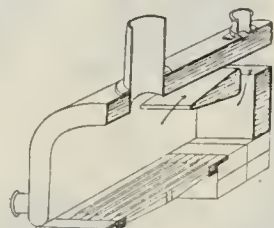


Fig. 46.

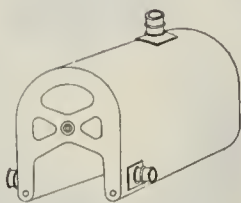


Fig. 47.

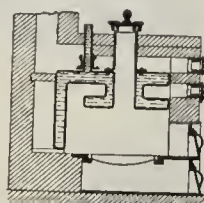


Fig. 48.

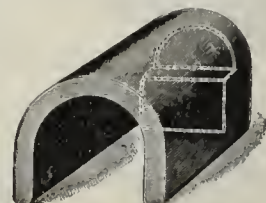


Fig. 49.

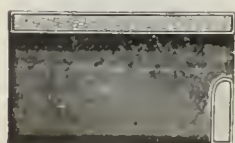


Fig. 50.

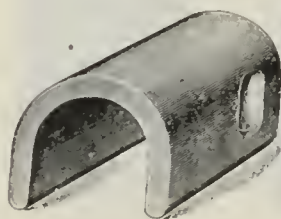


Fig. 51.



Fig. 52.

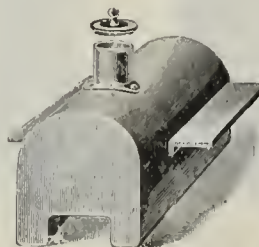


Fig. 53.



Fig. 54.

EUROPEAN HEATING BOILERS.

but designed for larger work, and made in 11 sizes, with from 22 to 45 square feet of fire surface, the direct or fire pot surface being rated to supply 6700 heat units and the back flue surface 3700 heat units per square foot of surface.

Figs. 20 and 21 show the Windsor boiler, with top return flue, which is rated the same as Fig. 18 and is made in 14 sizes, having from 11 to 38 square feet of fire surface, rated to supply 6000 heat units for fire box surface and 3700 heat units for the return flue surface per square foot of fire surface. They have an average of 1½ square feet of grate surface and about 2½ pounds of water per square foot of fire surface.

In Figs. 22 and 23 is shown the improved Severn boiler, of oval form, with top return flue and a large down draft flue at the back, in which are staggered water tubes, increasing the fire surface. It is made in 13 sizes, having from 25 to 170 square feet of fire surface, which is rated to supply, on an average, 5000 heat units per square foot of fire surface. This same Severn boiler in round form is shown in Figs 24 and 25 without the diving flue.

The Sichel boiler, a round boiler of rather odd design,

tion, based on each square foot of fire surface supplying 6000 heat units per hour.

All the boilers delineated in Figs. 8 to 32 are portable boilers, made of wrought iron 5-16 to ¾ inch thick and welded or brazed together, and are intended for use as tank heaters or for heating flats, greenhouses, &c.

In Figs. 36 and 37 the Zenith or Climax boiler is given, with top magazine feed and quite a tortuous route for the products of combustion to travel from the fire to the chimney flue. It is made in 16 sizes, with 19 to 145 square feet of fire surface, rated to carry 425 to 3520 square feet of direct radiation, based on the fire box surface supplying 6500 heat units, flue 3900 heat units and the outside surface 1800 heat units per square foot of fire surface per hour.

Figs. 38 and 39 represent the common Saddle boiler and Fig. 40 the method of setting the same in brick. These boilers are made in 20 sizes, with from 12 to 49 square feet of fire surface, rated to carry from 280 to 1100 square feet of radiation, based on the inner surface supplying 6000 heat units and the outer surface 2600 heat units per square foot per hour.

Figs. 41 and 42 show the Windsor boiler and its

method of setting. It is made in 29 sizes, having 22 to 134 square feet of fire surface, of which the fire box surface gives 6500, the return flue surface 3600 and the outside surface 1800 heat units per square foot of fire surface. The ratio of grate to fire surface ranges from 1 to 20 up to 1 to 30, and the boiler contains about 4 pounds of water per square foot of surface.

In Figs. 43 and 44 the Telescope boiler and its setting are presented. This boiler is designed for larger systems of heating, principally for residences, where the large central magazine insures an even temperature with the minimum of attention. It is made in 18 sizes, with from 15 to 148 square feet of fire surface, rated to carry 364 to 3700 square feet of direct radiation, based on the inside surface supplying 6500 heat units and the outer surface 2600 heat units per square foot per hour.

Fig. 45 is the Chatworth boiler, Fig. 46 the Cross-Saddle boiler, Fig. 47 the Beacon boiler and Fig. 48 the Kaiserin boiler, while Figs. 49, 50, 51, 52, 53 and 54 show different types of Saddle boilers, with or without magazine feed, back or side flues, and rated and proportioned the same as those shown in Figs. 38 to 42.

(To be continued.)

BRITISH HEATING AND VENTILATING ENGINEERS.

The autumn meeting of the British Institute of Heating and Ventilating Engineers was held at the Holborn Restaurant, in London, on October 22, with some 50 members in attendance, and President W. R. McGuire of Dublin in the chair. A paper was read by C. Mason on "Low Pressure Hot Water Heating with Special Reference to Dwelling Houses," and one by F. Milan on "Domestic Hot Water Supply, and Explosions in Kitchen Boilers." In the first paper is the statement that the cost of a plant for heating most houses thoroughly in the hall and principal rooms will be about the return for a year's rental, and this can be taken as a guide in estimating this class of work in England. In the discussion of the paper the president favored a system working satisfactorily with the temperature of the water from 160 to 180 degrees, and for determining radiation he believed in the rule of 200, 20 and 2, which requires the cubic contents of the room to be divided by 200, the wall area in square feet by 20, and the glass area in square feet by 2, the products to be added together to determine the square feet of radiation needed. This, however, was without allowance for a change of air, and when the room was satisfactorily ventilated the figure derived by dividing the contents by 200 should again be added.

From the character of the papers and the discussions it appears that this society is doing an important educational work in the heating and ventilating trades.

The Subject of Trap Ventilation.

Since the "higher criticism" by some Eastern lights has touched the ventilation of plumbing systems, which had been considered as unquestionably "the correct thing" by the trade, there has been some agitation of this once settled question by the laymen, principally from a financial point of view. In this connection some interest may be taken in the following account from the *Times* of Beverly, Mass., on a recent meeting of the Council of that city, when the plumbing ordinances were taken up for consideration:

Councilman McDonnell offered an amendment to Section 9, so that "all buildings having more than one water closet" be furnished with a vent pipe run from the crown to the trap.

Councilman Hamilton did not favor the change, for it would work a hardship on the poor workingman who is trying to build for himself a home.

Councilman McDonnell: "I would like to ask how many of the so-called poor people have more than one water closet? Some houses at the Farms have 14 or 15 water closets, and I maintain that it is absolutely necessary to have vent pipes."

Councilman Hamilton said that he knew of several buildings which have more than one water closet.

Councilman Boyden said that this provision was in the favor of the poor man. This clause will protect the poor

man from the owner of tenement blocks, for it insures good plumbing. "I have been told that the additional cost would not be over 10 per cent. on the total cost."

Councilman Fröst was called to the chair and President Pierce took the floor.

Councilman Pierce could not see the necessity for the amendment. Back vents are unnecessary in many cases; then there is an element of danger in these back vents by lodgment in aperture. "I do not think back venting is necessary. We have had no epidemics arising from unsanitary conditions, and 90 per cent. of the traps in this city are not back vented."

He asked if any members of the Council had their traps back vented, and Councilman McDonnell, a plumber, was the only member who could remember of having his trap vented.

"We will excuse you," said Councilman Pierce, and the Councilmen laughed at the joke.

Councilman Hamilton: "The Board of Health should be and is qualified to judge what is necessary to protect the health of this city, and if they favor the section as in this ordinance then I am prepared to vote for it."

Councilman Pierce showed a drawing on back venting and then the amendment was put. It was defeated by vote of 13 to 3.

HOW WE LEARN.

BY THE STUDENT.

One morning during a rather protracted cold spell, about three years ago, I found the following letter in our mail:

" ————:

"The water heating system you placed in my house has been a tremendous comfort to us so far this winter, both day and night. Until recently I have taken much pleasure in showing it to my friends and neighbors, and have taken care to mention your name in connection with it on such occasions. As a heating arrangement I am more than satisfied with it.

"I am, however, greatly surprised at its having developed astonishing qualities as an ice producing plant as well. Now you said nothing in your proposal about providing such a paradoxical attribute. Did you wish to surprise me by giving extra value for the stipulated price? If so, I am sure you cannot correctly gauge your generosity until you come and look at the glacier enveloping the extension of my house. I wish I could appreciate your thoughtfulness, but I can't. My friends living near persist in calling here, under pretext of making terms for ice for the coming summer, and you see that this is trying.

"Seriously, I don't want any ice—much prefer getting it in the usual way, from the ice waggon. Can't you send a good man out in the morning who can suspend this inconsistent operation of our heating system? I'll wait until 10 o'clock for him. I must ask this of you, as the architect, who lives opposite, says the weight may be disastrous. Yours faithfully,

For a few moments after reading this I must confess I was twisted. However, I sent a man out, and the case developed this way: We had used an automatic expansion tank on the job, and had run the overflow through the side of the house, just under the eave, and 2 feet above the tinued flat roof of a 10 x 14 extension. Every time the fire became low the water in the tank fell, and, as a matter of course, filled up again by means of the city pressure. Each time the fire was "mended" the tank overflowed, and, the weather being extremely cold, the water froze on the roof as fast as it escaped, until the ice had built up to the end of the overflow and extended in great icicles beyond the edges of the roof.

There was no other place to run the overflow to; we would gladly have run it to the cellar, but the owner's wife objected strenuously to showing more pipe through the house. We finally removed the automatic and replaced it with a good sized galvanized tank, using the same overflow, with an automatic air valve on it to prevent siphoning. We haven't heard a word about ice since.

The moral of this is not that we condemn the use of automatic expansion tanks (we use them yet), but to simply throw out the hint that when planning the overflow from one just "think it over."

Master Plumbers' Interstate Convention at Norfolk, Va.

Members of the Master Plumbers' Association of Baltimore, Md., are planning a lively jaunt for themselves and their wives on the occasion of the interstate convention, to be held at Norfolk, Va., on December 9. At their regular meeting on November 14 they elected the following delegates and alternates to attend the convention: President Lloyd Mitchell, State Vice-President P. T. Berry, John Trainor, W. H. Rothrock, August Eidman, W. H. Henkel, E. Zimmish, R. H. Whitney, William Kelly, William Dulaney and Thomas Hibberts; alternates, M. Miller, H. Rossbach, William Mitchell, A. Zimmers and William Eckard. The delegates and many others will leave Baltimore on Saturday, December 7, and will stop off at Old Point for Sunday, where they will meet the delegates from Delaware, the District of Columbia and other parts of the State. This is the first interstate convention ever held, embracing Maryland, Delaware, Virginia and the District of Columbia. The convention will meet in Emerald Hall and will hold its sessions for two days. The Norfolk plumbers have prepared an attractive programme for the entertainment of the visitors.

Plumbing Regulations in Porto Rico.

Evidently the authorities in Porto Rico are pursuing a commendable course in reference to the plumbing regulations, as will be seen by the following extract from the *San Juan News*:

The plumbing regulations recently issued by the Superior Board of Health regarding the registration of plumbers, plumbing, &c., has caused considerable unfavorable comment among those engaged in the trade.

This matter has been discussed at meetings of the various labor unions. President Timothée of the Federación Regional sent a letter to the Superior Board of Health, questioning the legality of the regulations and claiming that the action is detrimental to the working class.

Dr. W. Fawcett Smith has considered the facts as presented by Mr. Timothée, and yesterday answered his communication, calling his attention to several important points in the regulations which will benefit both the people and the plumbers.

It is the intention of the Board to at first issue a license to artisans and at the end of about a year, which is sufficient time to gain a fair knowledge of plumbing, to give those holding licenses an opportunity to pass a higher examination for a certificate.

Inspection of plumbing work, and the examinations, will be conducted by those who have no direct or indirect connection with the local trade.

As to the legality of the regulations, Doctor Smith stated that the Attorney-General had been consulted, and upon his approval the regulations were issued.

Needed a Steam Fitter.

From the Middle West a story has just blown in, says the *Paper Trade Journal*, concerning a well-known paper manufacturer who is so genial and jolly that he tells it on himself. Some time ago he began to feel badly. Then he felt worse, and finally he reached that stage where, in reading patent medicine ads, he imagined he had all the symptoms described in all of them. The next step was to go to a doctor, who advised him to go to Hot Springs for a month.

The patient followed the advice. When he arrived at the Springs, one evening, the hotels were so crowded that as a mere temporary arrangement he was given an 8 x 10 room, being promised better accommodations next day. He went to bed, but the heat was so intense that he could not sleep. The air was stifling, and perspiration rolled from all his pores, until, by the aid of a lively imagination, he worked himself into such a state of mind that he believed that he was nearing the point where it would be necessary to indicate what disposition his heirs should make of his belongings. At this point he sent for a physician, to whom he told his long tale of woe, laying particular stress on the fact that he was in a very desperate condition, one of the symptoms being that he was drenched in perspiration.

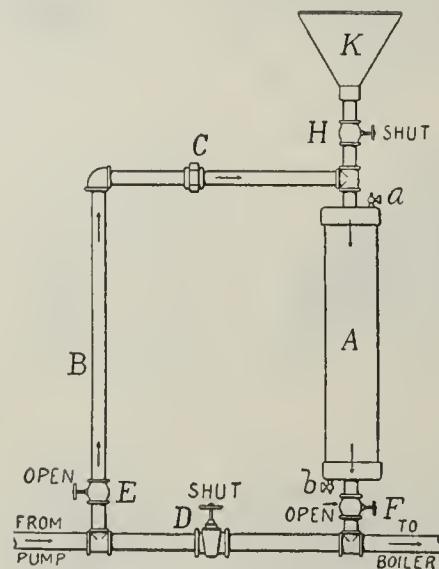
The doctor listened and then said: "You don't need a doctor; you need a steam fitter to turn off the steam to that radiator at the head of your bed." It is recorded that he recovered.

Introducing Solvents Into Boilers.

Various methods have been adopted for introducing dissolved solvents into a steam boiler for removing or preventing the formation of scale. This is sometimes done through a pump and again by means of an injector. These different methods ordinarily work very well in practice, but we have occasionally had complaints, says the *Locomotive*, to the effect that the soda ash, when passed through the pump, eats out the packing thereof. We think this would hardly be likely to occur with a new packing, but with an old one, which had become impregnated with oil or grease, the soda ash might easily give some such trouble as has been reported.

To assist those who have difficulties of this sort, we present herewith another plan for introducing the dissolved solvent, by means of which it is forced into the boiler without passing through the pump at all. The present arrangement calls for more piping than the ones previously shown, and its only advantage is that it saves the pump.

Referring to the illustration, A is a section of big pipe—say 6 inches in diameter and 30 inches long, which



Introducing Solvents into Boilers.

is to serve as a reservoir. This connects with the feed pipe running from the pump to the boiler, by means of the pipes B, C and F, which are so arranged that they connect with the feed pipe on opposite sides of the stop valve D. Over the reservoir is a funnel, K, by means of which the reservoir A can be filled through the valve H. The reservoir A is provided with pet cocks, a and b, at the top and bottom, so that it may be readily filled and emptied. A union is provided at C to facilitate the assembling of the piping. (A right and left elbow, of course, may be used instead, if it is preferred.)

The device is used as follows: The reservoir A being empty valves E and F and pet cock b are first closed, and valve H and pet cock a are opened. The soda ash solution is then poured into K, until the reservoir A is filled. The valve H and the pet cock a are then closed, as well as the valve D in the main pipe. Valves E and F are then opened and the pump is started. The device is then in the condition shown in the engraving and the water from the pump passes around through B, C and A, as shown by the arrows, sweeping the contents of A out into the boiler.

When the pump has been run long enough to thoroughly remove all soda ash from A, valve D may be opened and valves E and F closed. The reservoir A is then emptied by opening pet cock b, and either pet cock a or valve H, and the device is again ready for operation.

Bagging Live Gas Mains.

At the twenty-ninth annual meeting of the American Gas Light Association, held in Boston in October, the following paper, under the above title, was presented by P. H. Gibbons of Philadelphia:

A complete and successful shut off depends more on the proper placing of the bag than upon the lung power of the person who inflates it. Upon the rapidity of the operation quite frequently depends the operator's capacity for labor during the balance of the day. If he makes three or four unsuccessful efforts to bag a main against strong pressure his companions either pull him out of the trench, or he staggers out himself, weak kneed and sick. A violent, throbbing headache is his portion for the balance of the day, which makes it physically impossible for the poor fellow to render you little more than 50 per cent. of his labor efficiency. It has ever been to me, and perhaps to all of you, a deplorable sight to see workmen overcome with gas on crowded thoroughfares, where a gaping throug is sure to quickly gather; and they are never slow in expressing their sentiments of adverse criticism touching the "carelessness of the foreman, the neglect of the company and the villainess of the stuff they are selling for gas." I have given the subject of bagging live gas mains some thought, and while I have accomplished little in the right direction, that little will perhaps attract the attention of brighter minds, with the result that this portion of main laying will be made pleasanter and safer for the workmen, and less expensive for the company. The mains most difficult to completely shut off are those that are filled with dry scales and naphthalene and rust. A rubber bag that is soft and pliable makes the best stopper for a main of this character, and it should be so placed as to get an even pressure at all points of contact. Old mains are frequently found to be very rough on the inside and have little baracles of dried up tar (some of which are porous), which add to the difficulty of bagging off. A rubber bag makes the best stopper for a main of this character. The rubber bag does not make a safe or reliable stopper for a main that is imperfectly drained, especially if the liquid contains oily matter. The oil dissolves the rubber and bursts the bag. A stopper or a canvas bag works better in a main of this character. After the main is cut and the deposit drained off a rubber bag can then be safely placed in the same hole with the stopper or the canvas bag; we have an established rule here to place two bags in each open end, so that if an accident happens to one bag the other will take care of the gas. To rapidly and accurately place bags in live mains so that when inflated the axis of the sphere and main coincide, I have designed the "City District Bag Fork." When the bag is thrust through the bag hole the prongs of the fork can be readily slipped over the bag stem, close up to the pole of the bag, a distance a little greater than one-half the diameter of the pipe, or just enough to allow for the angle formed by the bag with the bag hole. The bag is then carried forward into position, and a luting of clay placed over the bag hole prevents further escape of gas while the bag is being inflated. I have used the fork daily on intersection work since August 26. During that time I had to deal with mains from 2 inches to 30 inches, and have not had a man to complain of headache caused by escaping gas. I find that any of my laborers can readily place a bag accurately with the fork. The fork is made of wire, which gives the prongs greater flexibility than could be obtained from solid material. It is simple of construction and offers no square or sharp edges to injure the bag. The fork described in this paper is made to readily pass through a 1-inch brass "bag saving device," and will handle rubber bags from 3 inches to 12 inches. The stems of canvas bags being larger and more cumbersome than those on rubber bags, they require a fork with wider space between the prongs. On intersection work we frequently find it both convenient and economical to drill one bag hole in the center of the cross, causing that bag to shut off all the gas coming from three directions; but, if necessary to use more than one bag, the fork enables us to place a separate bag at each branch, while we are cutting and removing the iron and lead from the other. I always use a rubber bag for this purpose, one size larger than the cross to be bagged off, and put it straight down, holding the pole of the bag well up against the bag hole while it is being inflated. In this way I invariably make a complete shut off. There is extreme danger, however, of puncturing the bag while cutting the old spigot out of the bell, unless the bag is protected in some way. To shield the bag and give added security against accidents I have designed the "City District Bag Shield," which consists of a piece of steel spring wire, shaped to snugly fit the main, a piece of oiled canvas being drawn over the ring. The ends of the wire are bent outward so that they can be grasped with the thumb and forefinger; when it is desired to put it in position the ends are pressed toward and overlap-

ping each other, which reduces the size of the ring and permits it to enter the pipe. By putting a light luting of soap around the edge, the shield not only protects the bag but the workman as well, since it will prevent all escape of gas that might pass the bag. In bagging the arm of a 6, 8, 12, 24 or 30 inch cross or tee I prefer to drill the bag hole close up to the bag and use a rubber bag a size larger than the arm, holding the pole of the bag well up to the bag hole while inflating it. I then secure it by means of a piece of twine tied to the bag stem.

New York City Notes.

Trade still continues brisk. Byrne & Murphy are doing the plumbing in a large factory building on Twentieth street, west of Eleventh avenue, for the Nassau Smelting Works, and in a loft building at Sixteenth street and Seventh avenue. C. Hensle has apartments on 113th street, near Lenox avenue; J. J. Fleming an eight-story apartment at Manhattan avenue and 111th street, Smith & Roffen an apartment on 109th street, near Amsterdam avenue, and J. W. Cooney a residence at 19 West Fifty-fifth street and a ten-story apartment at Sixty-third street and Madison avenue for the Fuller Construction Company. Jackson & Griffin are at work on a tenement at 211 East Broadway, John Frick has an apartment at 221 West 107th street and J. C. Wexted a tenement at 48-50 James street.

* * *

The trouble between the Amalgamated and Brotherhood societies of journeymen has caused an almost total suspension of work on the Ansonia Hotel, where M. Schnaier & Co. are the plumbers. The plumbers are working steadily, but enough trades or parts of trades have been called out in sympathy to about stop the interior work.

* * *

The Manhattan Branch representatives to the Greater New York Association, after one or two bad defeats, have completely turned the tables in bowling, and are now the recognized champions. It is said that new representatives to the Executive Committee next year will be chosen principally for their bowling capabilities.

* * *

John McAdam of 2353 Broadway has shown that he possesses what some of the alleged comic papers have denied that plumbers have—a conscience. Having been recently converted and joining the Lexington Avenue Baptist Church, he felt that the one thing lacking was a parsonage. So he presented the house 129 East 111th street to the church for that purpose.

New Swedish Acetylene Generator.

United States Consul Robert S. S. Bergh, at Gothenburg, Sweden, reports that Erik Cornelius, chemist at the carbide factory at Trollhättan, Sweden, has invented a new acetylene gas generator, called the Trollhättan, which is described as follows:

This generator is said to be much simpler in construction than former ones, and occupies little space. The falling of the carbide into the water is automatically regulated by a rubber ball, which, as soon as it is filled with gas, closes the valve between the carbide and the water. When the volume of gas decreases the hollow rubber ball contracts and the feed valve again permits the carbide to drop. The gas is stored partly in the rubber ball and partly in the space between the funnel shaped carbide magazine and the water. If much gas is generated the water is pressed through valves into the water jacket in the sides of the apparatus, thus furnishing more room for the gas. A separate gas tank is therefore not needed. Should too much gas be produced, water and gas escape through a safety valve. Common carbide is used; no cartridges. The gas is dried by being allowed to pass through the carbide magazine, where the carbide absorbs the moisture. As there is no gas tank, and the quantity of gas stored thus is insignificant, it is considered that the fire insurance companies will, without raising the insurance premiums, approve of the apparatus, even when it is placed in dwelling houses.

Changes in the Central Foundry Company.

The Central Foundry Company, 116 Nassau street, New York, have notified the local trade that hereafter their Monitor store at 76-80 Centre street, New York, will remain open for business on Saturday afternoons until 4 o'clock. Heretofore the Monitor store was closed on Saturdays at noon. On November 1 the Central Foundry Company replaced C. B. Bird, who had been with the old Monitor Iron Works for the past nine years, and who had succeeded Mr. Decker as manager of the Monitor store, by J. Wiggins. Mr. Wiggins was formerly bookkeeper and manager for Leonard D. Horsford of Beekman street, New York. Prior to that time he was employed in the capacity of traveling salesman by the M. Reynolds Plumbers' Supply Company and the Henry McShane Mfg. Company in the New York branch. We also learn that Alfred Fowler, who was formerly general manager of the Central Foundry Company and who left that concern to take a position as manager of all the branches of the Crane Company, has returned to the Central Foundry Company to resume his old position as general manager. George F. Ross, who has held the position in the interim, is to be placed in charge of a new department of the Central Foundry Company. He will have entire charge of the coal mines and the manufacture of pig iron. This change in the forces of the Central Foundry Company was brought about by the ill health of Mr. Ross, he being unable to stand the climate of this vicinity. The policy of the company will remain unchanged.

To Eat His Hat.

A special of November 16 to the New York Times from Louisville, Ky., contained the following in reference to one of the most popular men in the plumbing trade. Those who know him have no doubt that he will discharge his obligation with his usual good humor, and in such a way as to further extend the friendships he so widely enjoys:

Thomas P. Watts, sanitary plumber, is in for a rare treat and must eat his last season's straw hat. He is game and says he will do it. A hot political debate resulted in the following agreement:

"September 25, 1901.—I, Thomas Watts, am at present wearing a straw hat, which I propose to eat if the Republican ticket is not elected this fall.

"THOMAS P. WATTS.

"Witnesses—GEORGE W. HINSLER, HERMAN V. COHEN."

Mr. Hinsler is proprietor of the English kitchen and Mr. Cohen is advertising manager of the *Anzeiger*. The Republican ticket was unsuccessful and Mr. Watts is being held to his wager. A banquet is being arranged at the English kitchen next week, for which Mr. Watts must pay, and the menu will be as follows:

Soup.
Old straw.
Entrees.
Fricassee of straw.
Ragout of straw.
Straw hash.
Salad.
Straw, with pitchfork dressing.
Dessert.
Straw pudding, with old braid sauce.
Sulphuretted water.

Mr. Watts is game and says he will eat the hat.

Cutting and Threading to Sketch, Free.

The Ideal Mfg. Company, Detroit, Mich., have instituted a new scheme to enable them to sell their products in greater volume than heretofore. The officers of the company have decided to cut and fit, free of charge, nickel plated tubing to sketch for all kinds of special work wherein the products of this company are installed. In a letter just issued the company say:

The great demand for the Ideal volumeters, low tank combinations, centrifugal traps, fine thread tools and fittings, has demonstrated to the officers of the Ideal Mfg. Company that the plumber appreciates the manufacturer who invests his capital in the interests of the trade, and, with this encouragement, increased facilities have been added to our plant, making it the largest factory in the

world manufacturing high grade plumbing specialties, and in such form as to enable the plumber, by use of adjustable traps and nickel plated fittings, to install all kinds of special work at a great reduction in cost. We cut and fit nickel plated tubing to sketch for all kinds of special work, for railings, vent and waste pipes, free, no charge for labor.

The P. and S. S. League.

President Haff of the Plumbing and Steam Supply League had the pleasure of seeing his team, the F. N. Du Bois & Co. bowlers, win two games at the Monarch Alleys in New York on Monday night. All the men on the F. Ade & Co. team were out again, but were unable to avoid two defeats, while the Central Foundry Company team won and lost.

On Thursday night a surprise came in two victories for the team of John A. Murray, breaking their line of continuous defeats, while the team of E. F. Keating lost two games and kept their line of defeats still unbroken. The Salesmen won and lost a game. Henry Stein made a good score—better than Good's good score of 210—by making 222, the highest individual score yet made. G. W. Tilton of the John A. Murray team made 189, and F. J. McCarthy of the E. F. Keating team 185. A great deal of pleasure has been derived from the social side of this tournament.

Thermostatic Draft Regulators.

The season is near at hand when those who deal in heating goods will no longer feel the rush of the past few months. This will reduce the current profits, but will allow ample time to push other profit earning specialties. As the season advances all who use heating apparatus of any character for warming their residences will find more or less trouble in keeping the fire regulated so that it maintains a steady temperature in the building. This condition of affairs can very readily be turned to profit if the suggestions presented in a little pamphlet entitled "A Domestic Sentinel," issued by the Howard Thermostat Company, Oswego, N. Y., are studied until they are thoroughly mastered and then brought to the attention of those who own hot air furnaces or heating boilers. This little pamphlet shows the different thermostatic regulators manufactured by this house, with all the working parts, and many illustrations making their application clear. The book also contains half-tone engravings of many fine residences in which the Howard system of draft temperature regulation has been used with satisfaction to the owners. There will be no occasion for a period of winter inactivity on the part of the dealer in heating apparatus if he will devote his time to the introduction and pushing of these comfort providing and fuel saving devices.

The Atlas Glass & Metal Company.

The Wheeling Hinge Company and the Wheeling Metal Company of Wheeling, W. Va.; the Republic Glass Company of Clarksburg, W. Va., and the Atlas Glass Company of Washington, Pa., have been consolidated into one company, to be known as the Atlas Glass & Metal Company, with headquarters at Wheeling, W. Va. Charles N. Brady of Washington, Pa., who is also president of the Hazel Glass Company, at Washington, Pa., is president of the new concern; W. S. Brady, who is president of the Fostoria Glass Company, at Moundsville, W. Va., is vice-president, and J. C. Brady, formerly secretary of the Wheeling Hinge Company, is secretary and treasurer of the new concern. It is the intention to manufacture at the Wheeling Hinge Company plant supplies and trimmings of all kinds for glass, but the business of the Wheeling Hinge Company will be continued as heretofore, it being run as a separate department, and the only change will be that some new and improved machinery will be installed for increasing their facilities, so as to enable the Wheeling Hinge Company to largely increase their output of hinges, bolts, nuts, washers and fire shovels and special stampings and forgings and such other goods as they have been making heretofore.

Heating and Plumbing Notes.

THE BUCKINGHAM-ROUTH COMPANY, New Haven, Conn., are installing an Ideal Water Heater in the St. James Parsonage, at Westville, and another Heater of the same type in the residence of W. J. Adams.

THE completion of the second sewerage district in Verona, Minn., has caused a rush in the plumbing business in that city, as house owners are desirous of having their drainage systems connected with the sewer before frosts sets in.

THE C. S. WENTWORTH COMPANY, Minneapolis, Minn., have the contract for heating the veterinary building at the State Farm.

THE contract for heating the Cathedral of the Immaculate Conception in Mobile, Ala., has been awarded to A. A. Aschaffenberg & Co. of New Orleans, at their bid of \$3075. A large steam plant will be used.

THE WESTERN PAUL STEAM SYSTEM COMPANY of Chicago have been awarded by the Board of Directors of the Indiana State Prison the contract to equip the prison heating plant with their system.

ROLLIN C. WILSON, 116 Nassau street, New York, has taken the sale of the Enameled Goods made by the Champion Mfg. Company of Blairsville, Pa., and will execute all orders for this class of goods in Eastern territory. The Champion Mfg. Company make a full line of Enameled Goods, including Lavatories, Sinks and Range Closets, together with four styles of Tubs of the popular designs. They have a catalogue in course of preparation, and as soon as it is issued it will be mailed promptly to the trade. Mr. Wilson has also added to his line Bath Wastes, Bell Supply Fittings, Basin Wastes, Lavatory Legs, Combination Low Down Fixtures and Low Down Brass Basins with china indices. He sells to the jobbing trade exclusively, and quotations will be made only upon application.

THE matter of providing plumbing instruction has received a great deal more of attention in Great Britain than in this or any other country. According to the latest available statistics there are now 26 plumbing classes carried on in the different cities and towns in England and Scotland, some of them being of considerable size and importance. Possibly the most important of these classes is that conducted at the Regent street Polytechnic, in London, where, since the plumbing classes were opened in 1882, no less than 2144 students have been given instruction. Of these 602 have passed the required examination and received diplomas. Most of the British plumbing classes are carried on directly under the auspices of the Plumbers' Guild, or of the local master plumbers' associations, and the examinations are conducted under Government auspices.

THE KEYSTONE BOILER & RADIATOR COMPANY, Huntingdon, Pa., have recently equipped their plant with new machinery, which will increase their output.

THE business of the Limberg Enameling Company, Cincinnati, Ohio, has increased to such an extent as to cause consideration to be given the idea of enlarging the capacity of their plant for producing Enameled Bathtubs.

H. GILBERT HART of the Hart & Crouse Company of Utica, N. Y., manufacturers of the Royal line of Steam and Hot Water Heaters, was a visitor in New York City this week.

PATRICK E. GREENE, Hartford, Conn., is overhauling the ventilating system in St. Patrick's School house in that city.

DOWNNEY & BRENNAN, New London, Conn., have just finished the plumbing and are now installing two Steam Heaters in the new residence of J. A. Wilkinson. They are also placing a Steam Heater in the residence of B. F. Mahan and are doing the plumbing and furnace work in that of John Humphreys.

IN reference to the copper work and steam piping he has recently done on a new oyster steamer, Henry Beutelspacher of Bridgeport, Conn., informs us that the work was that of a regular coppersmith. After the heater, condenser, pumps, &c., were in place the copper-

smith took the necessary measures to make correct templates of the pipes, which were then made and bent, with the brass flanges brazed on the end, and all branches. The main steam pipe was made of copper, 3-16 inch thick, flanged, brazed and riveted according to the laws and regulations governing the equipment of steam vessels. The most important pipes are those from the steam engine to the pump, from the condenser to the heater, from the sea cock to the circulating pump, from the circulating pump to the condenser, from the condenser overboard, and from the condenser to the feed pump, besides other work of less importance. It is said that the vessel will be one of the finest of its class on Long Island Sound. The work of Mr. Beutelspacher is in keeping with the character of the vessel.

C. A. LADDEN, Chicopee, Mass., has the contract for plumbing and ventilating the primary school building in that town. He is also doing the plumbing and steam heating in the new residence of James Kenna.

A RATHER remarkable case of public sympathy for a plumber is reflected in the action of a jury in Spokane, Wash. A plumber had been fined in a Justice's court for doing plumbing work without having taken out a license. He appealed to a higher court, and his only defense was an attack on the constitutionality of the plumbing law. The presiding judge held the law to be constitutional, but, after giving the case to the jury, they deliberated on the evidence for two hours and then brought in a verdict of "not guilty."

A FIRE recently occurred in the plumbing shop of J. J. Powers, Second street, Troy, N. Y., doing slight damage.

ROBERT S. WATSON was appointed Plumbing Inspector of Bay City, Mich., on November 8.

E. L. JONES & Co., Dover, Del., have been awarded the contract for the Heating Apparatus required in the new dormitory at the State College for Colored Students.

C. H. LATHAM, Norwich, N. Y., has just finished the installation of two additional Furnaces in the Congregational church in that town. He also has the contract for placing two Furnaces in the High School Building.

FLECK BROTHERS, Philadelphia, Pa., manufacturers and dealers in Plumbers' Supplies, now occupy their large new warehouse at 46, 48 and 50 North Seventh street, built during the past year. The building and its appointments are modern in every detail.

THE PAGE BELTING COMPANY, Concord, N. H., manufacturers of Leather Belting and Mechanical Leather Goods and Mill Supplies, are now placing upon the market a line of Pump Valves, Washers, Cup Levers and goods of a kindred nature. So that they can supply the trade the company are going to make this a separate department of their business, and hope by concentrating the energies of this one department upon these goods of choice stock that they will be able to figure to advantage to the jobbing trade.

F. N. DU BOIS & Co. of New York City, in order to better facilitate their telephone service and make it more efficient for their customers and themselves, have recently put in a private branch exchange, connecting the different departments of their house. They have notified the trade that their new telephone number will be 4332 Eighteenth.

THE master plumbers of Spokane, Wash., are opposed to the city plumbing ordinances and have been endeavoring to get a suit before the Supreme Court to test their legality.

CHARLES F. HAUSS arrived in New York on the steamer "Patricia" on Monday after having spent several months among the foreign heating trade.

THE new Walker Steam and Hot Water Boilers have had their merits brought to the attention of the trade since John A. Fish, who is well known to the trade throughout the country, has been made the manager of the wholesale boiler department of the Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass. Mr. Fish has recently sent to the trade a letter asking that careful notice be taken of the grate area, heating surfaces, depth of fire box, and the ease with which all of

the heating surfaces in these new Boilers can be cleaned. He also calls attention to the conservative rating given the company's Boilers, pointing out that they can be safely relied upon, as they are based on what he terms "honest measure." Mr. Fish recently made a somewhat extended trip throughout the country, but naturally could not visit all of his friends, and he hopes those who have not been visited and who have not received a catalogue and price-list of the Steam and Hot Water Heating Goods made by his house will correspond with him.

JESSE PERKINS, City Plumbing Inspector of Niagara Falls, N. Y., who was also appointed Sewer Inspector last summer, has been granted an extra compensation of \$25 per month by the city Finance Committee for the additional duties imposed upon him.

W. F. DEADY has been awarded the contract for plumbing a new school house at Northbridge, Mass., at his bid of \$1270.

R. G. PARSONS, secretary of the Department of Public Works, Buffalo, N. Y., will receive bids until November 29 for the heating and ventilating work required in a 17-room school house in that city.

It is probable that the Warren plant of the National Tube Company, at Warren, Ohio, which has been idle for some months, will be started up before long. The plant was recently visited by a number of officials of the National Tube Company, in connection with W. L. Kaufmann, manager of the Youngstown district, and it was found that with some slight repairs it could be started up in a short time.

THE UNIVERSAL SANITARY WARE COMPANY have just started up their new plant at New Castle, Pa. The plant is not entirely completed, but parts of it have been put in operation.

THE TOLEDO CHANDELIER COMPANY have now been in existence three months, at Toledo, Ohio, and are running their plant with 40 men, night and day.

The Committee on Buildings of the Board of Education of the City of New York will receive bids until December 2 for installing heating, ventilating and electric lighting plants in Balzer Hall, at Grant and Prospect streets, Brooklyn.

THE DWYER PLUMBING & HEATING COMPANY, Minneapolis, Minn., have the contract for 4500 feet of Cast Iron Pipe for the water main which will connect the St. Cloud Reformatory with its new water supply.

DAVID M. NESBITT of the house of Ashwell & Nesbitt, Limited, London, heating and ventilating engineers and contractors, who has been spending a few weeks very pleasantly in the United States, gave a farewell dinner to a few of his friends at the Hotel Imperial, New York, previous to sailing to-day on the steamer "Etruria" for home. Among those present were: W. M. Mackay, secretary of the American Society of Heating and Ventilating Engineers; Henry B. Gomers, secretary of the National Association of Master Steam and Hot Water Fitters; E. D. Smith, Enoch Rulzter and Timothy Kieley of New York and Andrew G. Paul of Boston.

New Firms and Changes.

GEORGE TALBOT has opened up a steam and hot water heating business at 28 Portland street, Boston, Mass.

THE SAFETY GAS SHUT OFF COMPANY of Amesbury, Mass., have been incorporated with a capital stock of \$200,000. Patrick H. Connor of Amesbury is president, and John J. Linehan of Haverhill is treasurer.

EDWARD A. CATTON, formerly with Thomas R. Catton, has opened a plumbing shop at 195 Columbus avenue, New Haven, Conn.

RAY M. CHESNUTT, formerly of Brookville, Pa., has gone to Jacksonville, Fla., where he will engage in the plumbing business.

TRUMBORE & CHRISTERN, Stroudsburg, Pa., who have been doing a plumbing and steam fitting business in that town, have dissolved partnership, Mr. Christern retiring from business.

THE H. G. VOLKMAR COMPANY of New York City have

been incorporated to carry on a plumbing business, with a capital of \$5000. The directors are H. G. Volkmar, Louis Winterhalter and H. W. Volkmar.

THE SAFETY BRIGHT LIGHT COMPANY of Peoria, Ill., have been incorporated, with a capital stock of \$5000, by Charles J. Puffer, Peter J. Fagot and Joseph E. F. Fisher.

THE TRACY PLUMBING COMPANY of New York City have been incorporated with a capital stock of \$5000. The directors of the company are T. J. Tracy, A. B. Foans and O. A. Samuels of New York City.

THE SCHWAB BROTHERS COMPANY of New York City have been incorporated to deal in Plumbers' Supplies with a capital of \$25,000. The directors are Paul Schwab of Jersey City, Adolph Schwab of Bayonne and T. A. McKennell of Mount Vernon.

THE NEW CENTURY CAR HEATER COMPANY, with principal office at 243 Washington street, Jersey City, N. J., have been incorporated to manufacture Car Heaters with a capital stock of \$200,000 by Herbert H. Shannon, Edward S. Carr and Henry C. Shannon.

Improper Chimney Construction.

Every heating contractor is aware that the chimneys constructed in many buildings are utterly unfit for the work expected of them. This is due in some instances to ignorance on the part of builders, but quite frequently to indifference as to the operation, where a saving in cost can be effected for the builder and also a saving in space. An experience with such a chimney recently came up in the business of the Æolipyle Company, 237 Water street, New York, through a change in the ownership of a property. When it became necessary to fire the steam heater the new owner found it was impossible to get up steam. In his search for a remedy he was advised to secure one of the Æolipyle combustion governors, and this led him to arrange for a representative of the manufacturers to visit the building and arrange for the connection of one of their devices. An examination showed a vertical sectional steam boiler having several square feet of grate surface connected by means of a 10-inch pipe with the chimney. The dull, lifeless appearance presented while there was fire in the boiler led to a further examination of the chimney, when it was discovered that the flue was $2\frac{1}{2} \times 16$ inches in size, or utterly inadequate for the work it was expected to perform. A flue of such dimensions is of a shape calculated to offer most positive interference to the travel of air, gas and smoke through it. In this instance the flue backed up against another flue of the same size in an adjoining building owned by the same party.

On seeing the flue the chimney expert stated that it was useless to attach any apparatus to the heater with the object of securing its satisfactory operation. He recommended that the chimney be torn down from top to bottom and a chimney erected in its place with two flues side by side, having dimensions at least 9×9 inches, and preferably 8×12 inches in size. A new experience was then in store for him, for he was informed that this flue had been used the previous winter and that no difficulty had been experienced in getting up steam. In the presence of the owner the janitor testified that such were the facts.

Naturally, there is but one thing to do in such a case, and that is to leave it severely alone, which leads to the suggestion that possibly the janitor was afraid that if he admitted the flue was useless he would lose his position, by making it necessary for the owner to go to such a great expense as the construction of a new chimney would necessitate.

A novelty in architecture is a building to be erected at the great Dusseldorf Exhibition for next year. The building is intended to show the products of an asbestos manufacturing establishment, and is a picturesque cottage of half timber work, the panels between the timbers filled with sheets of asbestos, with sheets of cork fabric inside. Construction of such material makes a warm house.

ADVANTAGES OF TIN ROOFING.

Every one is more or less anxious to live under his own roof, but in spite of this desire most people in planning their houses pay less attention to the kind of roof that is to cover them than to any other part of the house. This should not be. If it is necessary to have a good foundation, then it is just as essential to have a good roof. It is the covering and the protection to the rest of the building. It is far more exposed than the walls. When the roof is damaged all the other parts are more or less affected. Hence the advice, "Look well to the roof in erecting a house." It cannot be too strongly impressed upon both builder and owner.

When constructing the roof of a building, says the *Architects' and Builders' Journal*, the material used should always be of the best quality and of the most serviceable kind. Terne plate (roofing tin) of good, trustworthy quality is the ideal roofing material, embodying all the characteristics that are requisite for a perfect roof covering. Roofing tin is practically impervious to all the external and internal attacks to which a roof is exposed. Roofing tin will not freeze in cold weather; it will not get soft in the hot sun. It withstands the destructive ravages of a storm. It is noncombustible. The licking flames of a conflagration cannot feed upon it. It acts as a conductor of lightning in connection with the spouting. Roofing tin is light in weight, and therefore adapted equally well for stone, brick or frame buildings. It does not absorb the dampness. It will not break if a stone or a limb of a tree falls on it. It is suitable for roofing under all possible conditions, from the flat to the steepest pitched roof.

FIRE RESISTING QUALITIES.

The greater safety of a tin roof is proved by the fact that the insurance rates on buildings covered with tin are less than on buildings covered with any other material. An experience of 50 years has demonstrated its value. None of the many other materials which are offered for roofing purposes possess the universal advantages of tin roofing. The inflammable wooden shingle, the heavy and porous tile, the breakable slate, the dangerous paper and the cheap gravel all possess disadvantages which are fully overcome by terne plates of good quality. The large majority of good architects and builders strongly favor terne plates (roofing tin) as the best material for roofing, provided they can be assured that the quality is first class and that good workmanship is employed in the construction.

HIGH GRADE PLATES ESSENTIAL TO A GOOD ROOF.

With the established fact that a roof constructed of good terne plate is far superior to any other kind of roof, it must nevertheless not be overlooked that even a tin roof may under certain circumstances prove to be a bad one. There are two causes which may produce such a result; either the plates are light and common or the workmanship in laying the roof was poor. Some years ago there was quite a demand for cheap material for small dwellings erected by contract and bonus builders. It was not unusual for large quantities of inferior material to be used for roofing in order to reduce the cost, and the anxiety of contractors to take work at low prices induced many to use the cheapest material possible. The evil results of this move have made themselves apparent. Some cheaply constructed roofs have decayed by reason of the false economy practiced in their construction and neglect of future care. Proof is furnished that material higher in price and first class in quality would have been decidedly the cheapest. Fortunately conditions have changed again. The general prosperity of the country and the practical spirit which is animating the American public is now more than ever manifesting itself, and the general demand is for materials of the highest grade.

AMERICAN TERNE PLATES.

The American tin plate manufacturers, who in the short space of ten years have succeeded in building up a tin plate industry larger than that of any other country in the world, are ever anxious to satisfy the demands of the people. American products in this line are admitted to be the most excellent the world over, which

fact was recognized by the International Board of Judges of the "Exposition Universelle," at Paris, when they awarded to American tin and terne plates the first prize. Any one who desires to have a perfect roof can obtain it if he but goes to the trouble of making sure that he gets the proper quality of material purchased from reliable dealers and put on by experienced workmen. The American tin plate manufacturers, with their unequaled facilities in their vast resources and the best obtainable skill in the manufacture of terne plates at their command, have made a special study of the roofing plate branch of the business. The result is that to-day American tin plates stand pre-eminent.

Different qualities of terne plates may be used in different districts. A quality of roofing plate suitable for one district may be totally unadapted for another district. But to meet all conditions terne plates are made to-day that will stand any climate. But observing the truism that the best is the cheapest in the end, none but the best qualities should be used in all cases, and if this rule were adopted universally all objections and prejudices, if any, which may exist in some localities against tin roofing would soon disappear. Roofs made from good plates, however, may be spoiled by bad workmanship. To guard against this the following suggestions are offered, the observance of which is of the utmost importance in the proper construction of tin roofing:

STANDING JOINTS VS. FLAT SEAM.

Steep tin roofs should be made with standing joints. By using the patent soldered standing joint you can avoid having steep roofs, as sufficient fall only need be given to allow the water to flow off gently. You also gain more room inside the building, which is greatly desired. No place for dirt to accumulate and rot the top of the joint, as in the old way. Only roofs with less than one-third pitch have heretofore been made with flat seams, and sheets 14 x 20 inches used, because the larger number of flat seams made in this manner stiffened the surface and prevented buckling and rattling in stormy weather. The disadvantages, however, in using a flat seam are it is more difficult and more seams to solder, besides there is no room for contraction and expansion, which causes the seams many times to open in hot and cold weather and leak in bad weather.

Steep tin roofs are covered with 20 x 28 terne plates, with standing joints. This allows for contraction and expansion, but must be made steep to prevent the water from rising over them and causing leakage, to overcome this disadvantage, however, and have a perfectly water tight roof. The patent standing soldered joint, which expands and contracts, the latest improved and best way of putting on a tin roof, supersedes both. You can have your roof perfectly flat if so desired. It cannot leak.

CHEAPEST TO USE BEST GRADE PLATES.

If you want the best as well as a durable roofing plate to cover your house with, use old method heaviest coated ternes, and when put on by good and reliable workmen a roof of this kind is good for years, and with proper care will outlast and in the end cost less than any other style of roofing. The larger the sheets, properly cleated not over 7 inches apart, and not less than four to a sheet of 20 x 28, and the fewer cross seams will make the best roof. While it is always cheapest to use the best materials, you may, when a cheap roof is required for reasonable service, use a cheaper terne plate, with less coating, but put on with the standing joint. For general roofing IC terne plate, in which the iron body weighs 50 pounds per 100 square feet, is more suitable than IX, as it can be worked closer and makes the best job, besides the seams in the lighter plates will not suffer as much from contraction and expansion as the thicker plates. The amount of terne coating on the lighter sheets should in all cases be fully as heavy as on the heavier plates. For spouts, valleys and gutters heavily coated IX terne plates of the very best quality should always be used, and are the best for these purposes.

USE NO ACIDS.

The use of acids or flux in soldering seams of a tin roof should be carefully avoided. Acids coming in contact with the bare iron on the cut edges and corners where the sheets are folded and seamed together will

cause rusting. Good rosin only should be used. Roofs should be carefully cleaned, and all rosin spots and detrimental substances should be removed as the tinner's work is being finished. Lumps of rosin left on the roof will melt in the sun, stick to the roof, cause blisters in the paint and prevent it from adhering. For valleys, spouts and gutters of a tin roof no other metal than terne plates should be used, because the galvanic action produced by different metals coming in contact with each other will cause disintegration under atmospheric influences.

The sheathing boards covering the roof should be put close together. The wood should be well seasoned and as free from knots as possible. It is also advisable to cover the boards with good roofing paper before the tin is laid. The tin should in all cases be painted before it is laid and fastened to the roof, as this prevents sweating. The outside should receive one coat of paint as soon as the roof is finished and another a month or so later. To make tin roofs last for generations they should be repainted every three to five years, in the fall or early spring, with a good iron oxide and red lead or pure silica graphite paint mixed with boiled linseed oil thoroughly mixed and evenly applied. The frequency of the intervals must depend largely on the climatic conditions of the country.

THE PASSING OF THE OLD TIME TINMAN.

BY R. IME.

The old time tinman is no more,
For, as tinware now is made,
The modern drop press has the drop
On him, and on his trade.

No more in every tinker's shop
Throughout this hustling land
Does he draw weekly wages
For making ware by hand.

In fields where he was once supreme
A boy now turns a crank,
And grinds out wagon loads of ware
With every lusty yank.

Now, too, the metal jobber has
Supplanted him, so that
The old style, ancient tinman
Hardly knows where he is at.

Where once ten hours made a day,
The rule has changed of late;
Hence the boss must make it pay,
Though "Jours" now work but eight.

Around the tinman's former haunts
No charcoal fires are seen;
Instead, a blue flame roars like h—,
'Mid smells of gasoline.

Forgotten are the tales he told
Of some famous big day's work,
But clear is still the memory
Of his ability to shirk.

The old time tinman is defunct,
His days are filled with woe,
Since machinery hath dealt to him
A solar plexus blow.

Furnace or Heater Pipe Tin in Rolls.

Wheeling Corrugating Company, Wheeling, W. Va., and 47 Cliff street, New York, have just put on the market heater pipe tin in rolls for the convenience of tinsmiths and others who manufacture furnace or heater pipe of tin. The metal is seamed together in lengths 120 feet long and 20 inches wide, each length containing 200 square feet, either IC or IX tin. The material is packed for shipment in sheet iron casks or cylinders with wooden heads, so that it is well protected until needed. An important feature of this product is that the

workman is always prepared to make up any diameter of pipe from one bundle of each grade of stock, instead of being compelled to carry tin plates in boxes of the various sizes needed for each diameter, some of which are seldom used.

The H. W. Johns Paint Mfg. Company.

The H. W. Johns Mfg. Company, manufacturers of asbestos roofing, roofing felts and coatings, sheathings of all kinds, asbestos packing, asbestos cements, &c., whose main offices are at 100 William street, New York, announce to their customers that their paint business has been incorporated as a separate organization, and will hereafter be known as the H. W. Johns Paint Mfg. Company. The officers of the new company are H. W. Johns, president; G. W. Gladwin, vice-president; F. R. Boocock, treasurer, and John S. Mowry, secretary and general manager. These gentlemen have long been identified with the manufacture and sale of H. W. Johns liquid paints, and their customers are therefore assured that the same high standard of quality for which their paints were justly celebrated will be fully maintained.

The purpose of the reorganization is to place the paint department of the concern on an independent basis, and thereby enable that department to more thoroughly push the sale of their paint products. The change took effect on and after November 18, 1901. All correspondence referring to paint should be addressed to the new company, 100 William street, New York.

All accounts receivable to and including November 16, 1901, will be made to the H. W. Johns Mfg. Company, and all accounts payable for the same period will be made by the same company. After the date specified both accounts receivable and payable will be assumed by the H. W. Johns Paint Mfg. Company.

The Use of Roofing Tile Abroad.

In describing the manner in which roofing tiles were used in Greece and Rome, a writer in an exchange states that flat tiles with raised edges extended from rafter to rafter, the upper end having a rib which entered a groove formed on the under side of the tile placed above it. After these were laid the joints above the rafters were covered with other tiles, each formed like the half of the frustum of a hollow cone, so that they were able to lap upon each other, their edges lying snugly to flat tiles on the roof. The end of these ridges was terminated with an ornament. Tiles, both flat and curved, were in great demand in Roman architecture. Roofs were covered with the flat and curved tiles alternating. Tiles 2 feet square, with a foot at each angle, were used to line the thermæ, so that an air space between them and the wall should prevent the absorption of water by the latter.

FLASHINGS

JOHN H. MORGAN of Cambridge, Ohio, one of the national trustees of the Amalgamated Association of Iron, Steel and Tin Workers, will, it is said, be appointed Chief State Workshop and Factory Inspector of Ohio.

EUGENE W. PARONY, one of the district managers of the American Sheet Steel Company, sailed last week for Europe.

THE ALAN WOOD IRON & STEEL COMPANY of Philadelphia, Pa., have been incorporated with a capital stock of \$1,250,000. The company will take over all the Alan Wood properties at Conshohocken, Pa.

THE Sheet Bar mill at the Midland Steel Works plant of the American Sheet Steel Company, at Muncie, Ind., will be placed in operation shortly. The mill was shut down about six months ago, it was supposed permanently, but the scarcity of Sheet Bars has made it necessary for the company to place it again in operation.

THE latest advices from England report that although, up to the present, the production of Tin Plates in that country is not in excess of requirements, as many of the Welsh works are still employed on contracts made with American buyers in the early stages of the Steel strike in this country, it is feared that the demand

for Welsh Tin Plates will soon fall behind the production, which is now large, a number of idle mills having been placed in operation.

THAT architects, builders and owners appreciate a Roofing Tin having genuine Charcoal Iron base is evidenced by the fact that there is a large and growing demand for this class of Roofing Tin. The J. M. & L. A. Osborn Company, Cleveland, Ohio, placed upon the market some years ago a Roofing Tin with a Charcoal Iron base. This concern report a steady and increasing demand for this grade of Plates, Osborn's Charcoal Iron Old Style Terne Plates being frequently specified where the best material is desired. The company have recently shipped 35 boxes of IX, 20 x 28, Plates to Detroit, Mich., for a large church building in that city. While in the past it has been found difficult to secure ample supplies of Charcoal Iron Sheets for making up these Plates, the J. M. & L. A. Osborn Company now assure us that the Sheets can be secured in sufficient quantities for all requirements.

JONES & HOPKINS, Nashville, Tenn., have a contract, amounting to nearly \$1500, to put a Slate roof on the new municipal electric plant of the city of Nashville. They have also just taken a contract for roofing the new building of the Fire Department of the city. The firm have several other roofing contracts in hand, and are enjoying an exceedingly good trade in their Stove and Range departments. They employ 30 hands.

W. T. GUMMEY of Gummey, McFarland & Co., Philadelphia, Pa., paid a visit to New York City this week and met a number of his friends in the Metal trade.

THE GRIFFITHS CHARCOAL IRON MILLS of Clinton Township, Washington County, Pa., have been incorporated with a capital stock of \$200,000.

It is reported that negotiations are on foot with the Board of Trade of Wheeling, W. Va., for the establishment in that city of a new eight-mill Sheet plant.

THE SOUTHERN CAN COMPANY of Baltimore, Md., have been incorporated by Samuel H. T. Hayes, Robert B. Schurger and others, with a capital stock of \$5000, to manufacture Tin Cans.

ALBERT F. BAUMGARTEN of Pittsburgh, Pa., has purchased the plant of the Crucible Steel Company of America at Cumberland, Md., and will, it is said, operate it as a Sheet mill.

W. S. BULLARD, Hartford, Conn., is doing the roofing on the new buildings of the Ordnance Company, in that city, and on an addition to the factory of J. S. Fray & Co. He has also the contract for the roofing on the new buildings of the Deoxidized Brass & Copper Company.

DEETZ & Co. built last spring a suitable plant for their business at 408 West Superior street, Duluth, Minn., and during the summer they did a heavy business in Pitch and Gravel Roofing, and in Tin and Sheet Iron Work. The company's Sheet Metal shop is well equipped with modern machinery, and their contracts have extended over Minnesota and the Dakotas. A. W. Deetz, who is the manager of the business, has had 20 years' experience in the field. The firm now have contracts for work on the St. Luke's Hospital, the Polish Roman Catholic Church, a Jewish Synagogue, the Northern Pacific freight house, the Peavey Cement Elevator and the car shops at Proctor's Point. They are also doing the ventilation work at the Normal and High School buildings at Two Harbors, using Globe Ventilators.

GUMMEY, MCFARLAND & Co., Philadelphia, Pa., have recently booked large orders for their Genuine Anti-Pinhole Charcoal Iron Tin Plates. Architects, they advise us, are specifying these Plates in many instances. One entire block in Detroit, Mich., is to be covered with these Plates, as is also the roof of the Masonic Temple in Danville, Ind.

FORMER employees of the Star and Monongahela tin mills of the American Tin Plate Company, at Pittsburgh, by a vote of 197 to 3, have rejected the proposal to open these mills to members of the Amalgamated Association. It will be recalled that before the strike was ended both these plants were started up with non-

union men, and the Amalgamated Association is no longer recognized, and no members of that organization can work in either of these mills and be a member in good standing. Both plants are in full operation, and have been for a long time.

THE CHATTANOOGA STEEL ROOFING COMPANY, Chattanooga, Tenn., are now, as during the whole of this year, very busy filling contracts for Roofing and their other lines, for home and export trade.

CHARLES M. SCHWAB, president of the United States Steel Corporation, has agreed to donate \$50,000 toward the erection of a Y. M. C. A. building at Vandergrift, Pa., where the largest of the Sheet plants of the American Sheet Steel Company is located.

THE men employed in the Monongahela Works of the American Tin Plate Company, on the South Side, Pittsburgh, are still annoyed a good deal by the strikers, and recently it was found necessary to ask for additional police protection for the men.

The Zinc Smelting Corporation.

Details of the plan to consolidate the large zinc smelting companies in the Missouri district have just leaked out. We are informed, through authoritative sources, that options have been secured on all the plants mentioned below, and that E. Rollins Morse & Bro. of 6 Wall street, New York, are conducting the details of the proposed consolidation. The company are known as the Zinc Smelting Corporation, with offices at 1 Exchange place, Jersey City, N. J. The company were organized under the laws of the State of New Jersey with a capital of \$50,000,000, divided into \$25,000,000 of 7 per cent, cumulative preferred stock and \$25,000,000 of common stock, \$5,000,000 each of the common and preferred stock to be reserved for the acquisition of properties in addition to those already contracted for, and for other corporate purposes.

The company have contracted for the acquisition of the Illinois Zinc Company, George E. Nicholson, Vulcan Spelter Company, Empire Zinc Company (Joplin, Mo., plant), Matthiessen & Hegeler Zinc Company (half interest), James La Tourette, S. H. Lanyon & Brother, Lanyon Zinc Company, A. B. Cockerill, Prime Western Spelter Company, Collinsville Zinc Company, St. Paul Mining Company, Kansas City Mining & Spelter Company, Cherokee-Lanyon Spelter Company, Girard Zinc Company and Bruce Mining & Smelting Company.

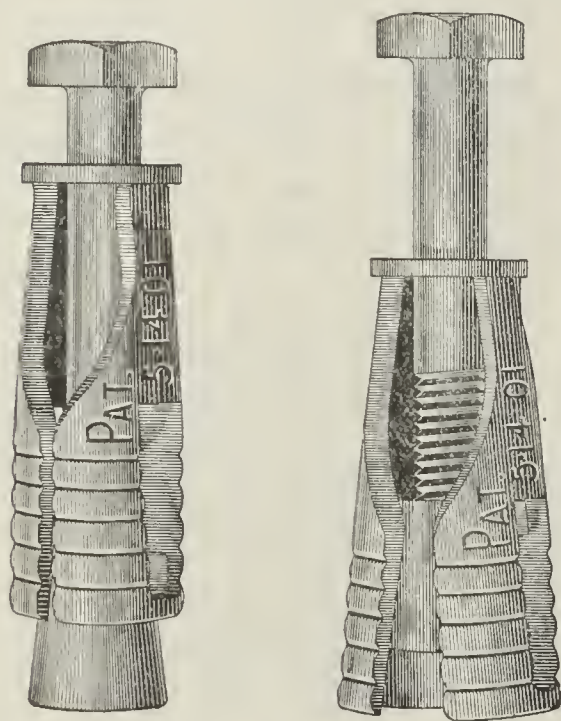
It is expected that, with ample working capital and through efficient management and numerous economies, the profits of the corporation will be largely increased beyond the combined profits of the individual plants, and with the present capacity and present market and consumption it is expected that the profits of the Zinc Smelting Corporation, from the production of spelter, zinc and sulphuric acid will be close to \$4,000,000 annually.

The present production of spelter in America the prospectus states is about 140,000 tons per year, most of which has been consumed at home, over 60 per cent. being consumed by the steel and wire industries. Heretofore, it says, the exports have gradually increased, but during the present year the home consumption has been practically equal to the production. The European production is given as about 380,000 tons annually, and the consumption as fully 400,000 tons. The cost of production in Europe is placed at over \$10 per ton more than in America, and the consumption per capita is more than 25 per cent. greater.

Manager A. R. Hunt of the Carnegie steel mills, at Duquesne, Pa., announces that the month of October was the greatest in the history of the works in regard to the output of iron and steel. In the Bessemer department 55,521 tons of steel were produced, which is 2332 tons above the world's record for one month. In the open hearth department 40,321 tons of steel were turned out, which is 1917 tons over the world's record, and at the 21-inch mill 51,936 tons of billet steel were made, being 3859 tons above the world's record.

The Brohard Expansion Bolt.

The Brohard Company, Philadelphia, Pa., are placing on the market a new expansion bolt, illustrated herewith. The device is manufactured of malleable iron and is designed particularly to provide a bolt, having an expansion cover, capable of easy insertion and removal from fixed positions in the wall or other place where it is to be used and which will remain in that fixed position. The parts of the expansion bolt are few, and are so arranged that they cannot become detached from each other. The driving head or spreader is cone shaped and is in contact along its whole length with the expanding sections of the sleeve. It is held in position by means of suitable lugs or ribs, which are dovetailed into the slotted sides of the expansion case, making it impossible to force the spreader or drawing head from the case. The company are now prepared to furnish these



The Brohard Expansion Bolt.

bolts in sizes $\frac{1}{4}$ to 1 inch diameter, and from $1\frac{1}{4}$ to 12 inches in length, larger and special sizes being made according to order and specifications.

Gas Made from Air.

According to Raoul Pietet, the famous Swiss inventor, his latest discovery in regard to the manufacture of oxygen gas is likely to revolutionize the metal trades and have an important influence on most of the industries. Briefly the invention consists of taking oxygen out of the atmospheric air by physical means, and not by a chemical process, as at present. The inventor claims that by this process the cost of oxygen will be less than $\frac{1}{2}$ cent per cubic foot, which, compared with present prices, is in the proportion of 1 to 50.

The process will be applied to metallurgy, chemistry, lighting and public health. For lighting purposes the oxygen will be mixed with the water gas, and, it is said, will give a much better light at a much lower price. It has great heating properties and can be used for smelting all ore containing gold and other refractory ores. The process, it is said, will be much cheaper than any present one for sanitary purposes. The oxygen can be put into large rooms, schools, theatres and so forth, and by this means the air will be rendered much purer.

The money in circulation in the United States on November 1 was \$2,246,300,000, or \$28.72 per capita. This is the highest point reached, both in volume of money and in the amount per capita, also the largest sum of money in circulation in any country in the world, and the largest per capita of any country except France.

The National Founders' Association.

The fifth meeting of the National Founders' Association, which was held last week in New York City, brought together a large number of the members. The meeting was one of the most interesting and successful ever held. Among those who attended the meeting were W. H. Phaler of the Abram Cox Stove Company, Philadelphia; C. A. G. Winther of the Chapman Valve Mfg. Company, Indian Orchard, Mass.; W. S. McMullen of the Richmond Stove Company, Norwich, Conn.; John M. Taylor of the Dominion Radiator Company, Toronto, Ontario; Alex. Jarecki of the Jarecki Mfg. Company, Erie, Pa.; Matthew Griswold and Matthew Griswold, Jr., of the Griswold Mfg. Company, Erie, Pa.; W. L. Herendeen of the Herendeen Mfg. Company, Geneva, N. Y.; F. A. Strong of the Eaton, Cole & Burnham Company, Bridgeport, Conn.; Thomas Devlin of Thomas Devlin & Co., Philadelphia; H. Van Atta of the J. L. Mott Iron Works, New York, and Stanley G. Flagg, Jr., of Stanley G. Flagg & Co., Philadelphia.

An elaborate and interesting address and report was presented by President H. W. Hoyt, who reviewed in an able manner all of the important phases of the secret work of the association and gave his views as to the most expeditious method of solving problems before the association. The report of Treasurer John R. Russel showed the association to be in a sound financial condition, and Secretary John A. Penton read an exhaustive report in which he outlined the successful achievements of the association, particularly in the manner in which they had been able to adjust disputes with employees. Several interesting papers were also read and discussed.

The following officers were elected for the ensuing year:

President.—W. D. Sargent, the Sargent Company, Chicago, Ill.

Vice-President.—F. T. Towne, Yale & Towne Mfg. Company, Stamford, Conn.

Treasurer.—John R. Russel, Russel Wheel & Foundry Company, Detroit, Mich.

Secretary and Commissioner.—John A. Penton, Detroit, Mich.

At a banquet at the Gilsey House President Hoyt was presented with a magnificent sterling silver tea set and salver consisting of seven pieces, the salver bearing an inscription showing the appreciation of the association for Mr. Hoyt's services as president. The Cleveland and Lorain foundrymen also presented to Secretary Penton a chest of sterling silver knives, forks and spoons, containing 139 pieces, as a token of their esteem for his services in the interests of the foundrymen in the great molders' strike in those cities last year.

Industrial Crisis in Austria.

United States Deputy Consul-General Simon W. Hanauer, at Frankford-on-Main, reports that accounts from Prague, Bohemia, state that industrial conditions in Austria are going from bad to worse. The Bohemian rolling mills have been forced to discharge a large number of hands. The Prague Iron Industrial Company, as also the Bohemian Mining Company, two of the most extensive works in Austria, have also reduced operations, discharging a large force of workmen. Several hundred operatives were discharged at the iron works in Kladno and Teplitz, Bohemia. The sales of the combined works belonging to the Austrian syndicate during 1900 were 62,000 metric tons less than in 1899, and it is estimated that they will shrink much more this year. Their sales comprised 305,000 metric tons in 1899. Germany was a large customer for this Bohemian iron. The depression in that country curtails the sales, and the demand from domestic (Austrian) machine and bridge building works has almost ceased.

An effort is to be made to remove a large red oak tree from one of the wildest sections of Arkansas to the site of the coming exposition in Forest Park, St. Louis, Mo., without injuring it. The tree is 100 feet high and

12 feet in diameter at the base. A double tramway is to be built from the tree to the river, where it will be floated and towed to St. Louis. It is estimated that the work will occupy six months.

Give Street and Number in Address.

The extent to which correspondents omit the number and name of the street when giving their address is the cause of no little trouble and annoyance to those receiving their communications. Many writers also appear to labor under the impression that there is only one city or town bearing the name of the place in which they live, and that therefore there can be no possibility of any mistake on the part of the recipient as to the proper address. In this they grievously err, as a casual examination of a United States Postal Guide will quickly show. As indicating in some measure the extent to which this form of annoyance is carried, we present below a letter from a gentleman who has business dealings in many cities of the Union, and who, as a consequence, is in receipt of letters from widely scattered sections. Among other things he says:

"Any one will notice from even a casual examination of the letter heads of many firms, and even of private individuals, that in perhaps the majority of cases they omit the street and number in their address. Sometimes they give the number of the room in a public building where their offices are located, but often they simply give the name of the building, with no further address except that of the city and State. Now, this may be all well enough for a citizen in their locality, but when a stranger desires to see these parties, or writes them, it is another question.

"In correspondence, usually the name of a building is a long one, and it takes a great deal of time to write it out, and one is more apt to make a mistake. For example, I correspond with parties in the 'Metropolitan Life Insurance Company Building,' also with parties in the 'Keith-Perry Building,' whereas the number and name of the street would be more simple. Or, in another case, the person lives on the corner of 'Commonwealth avenue and Washington street.'

"Now in my travels I have visited many cities, trying to find people located in some of these buildings, and while in Cincinnati a short time since, with the letter head of the kind above mentioned in my possession, I asked a policeman where such a building was located, and he directed me some six blocks away. I showed him the letter head and spent about an hour trying to find the place, and to my surprise, as well as disgust, the building I was looking for was directly across the street from the corner where I asked the policeman. Now if the street and number had been on that letter head I would not have had to ask questions, and anybody could have directed me to the street, and it is only a question of intelligence to follow up the number.

"I spoke to a gentleman yesterday about this matter, and showed him his letter head, and he replied, as everybody does, 'Why, everybody knows where the Benedict Building is.' To prove this I asked a policeman and a hotel clerk and neither of them knew where it was.

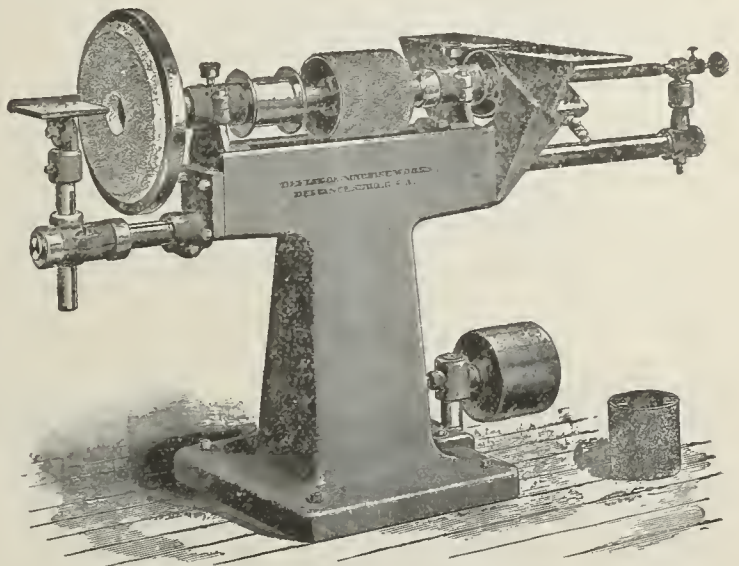
"Now you see this takes a great deal of valuable time. People should give their number and street address. It saves time in writing it out and looking it up. It seems to me that this subject is an important one, and I trust others will express their views regarding it."

The United States Consul-General in Vienna reports that a committee composed of leading manufacturers, members of the Vienna Chamber of Commerce and representatives of prominent corporations, has just held a meeting in that city, at which the idea of an international exposition of inventions and novelties, to take place in Vienna in 1903, was discussed. The general scheme of the exhibition was unanimously indorsed, and the preliminary steps taken thus far toward its realization by the committee were approved. According to the programme as sketched out it is to embrace all

varieties of technical inventions and, in particular, those already practically introduced in the manufactures. There will, perhaps, be an inventors' gallery, where workshops will be open for public demonstration. The financial support of the undertaking seems to be assured. Great hopes are placed in the success of the exhibition, which Austrian gas and water men are especially active in promoting. From this inceptive stage this would seem to be an excellent opportunity for Americans to show their achievements in practical invention, a field that may be called almost pre-eminently their own.

The Defiance Grinding and Polishing Machine.

The machine here illustrated is equipped with a solid emery disk, set in a metal ring, which is used for grinding and truing up work. It is also fitted with two polishing drums, and a small round emery rod for polishing small curves. An emery belt can be used over the pulley at the base of the machine and the one underneath the table. The emery disk is 16 inches in diameter, and is provided with a swinging adjustable table



The Defiance Grinding and Polishing Machine.

which is planed true on top. It can be used to carry the work across the face of the disk, or as a stationary table. The polishing drums are 6 x 6 and 7 x 7 inches. The table over the smaller drum is provided with a vertical adjustment to regulate the depth of cut. The machine is built by the Defiance Machine Works, Defiance, Ohio.

THE ISLAND FOUNDRY COMPANY of Mechanicsville, N. Y., are sending out a neatly printed eight-page pamphlet of convenient size to carry in the pocket, calling attention to the Hot Air Registers and Ventilators which they manufacture. Numerous designs are illustrated, including the popular lattice style, the round slide center design, plain lattice pattern, circular top design finished in black or white japan and convex design for thin partitions, together with Ventilators to be operated by means of cords, and furnished in any style, design or pattern. Tables are given showing the sizes in which the various styles of Registers are made and the prices for different finishes.

THE BENEDICT & BURNHAM MFG. COMPANY, Waterbury, Conn., Brass and Copper rolling and Wire mills, have let the contract for the erection of an acid house, 50 feet square, of brick and iron construction.

There has recently been cut what is believed to have been the largest walnut tree in Ohio, and one of the largest now left in the country. This tree measured a little over 8 feet in diameter at the stump, and the body of the tree, suitable for cutting into logs, was 74 feet long. This will make two carloads of export logs, in addition to a large quantity of squares which will be cut from the limbs.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

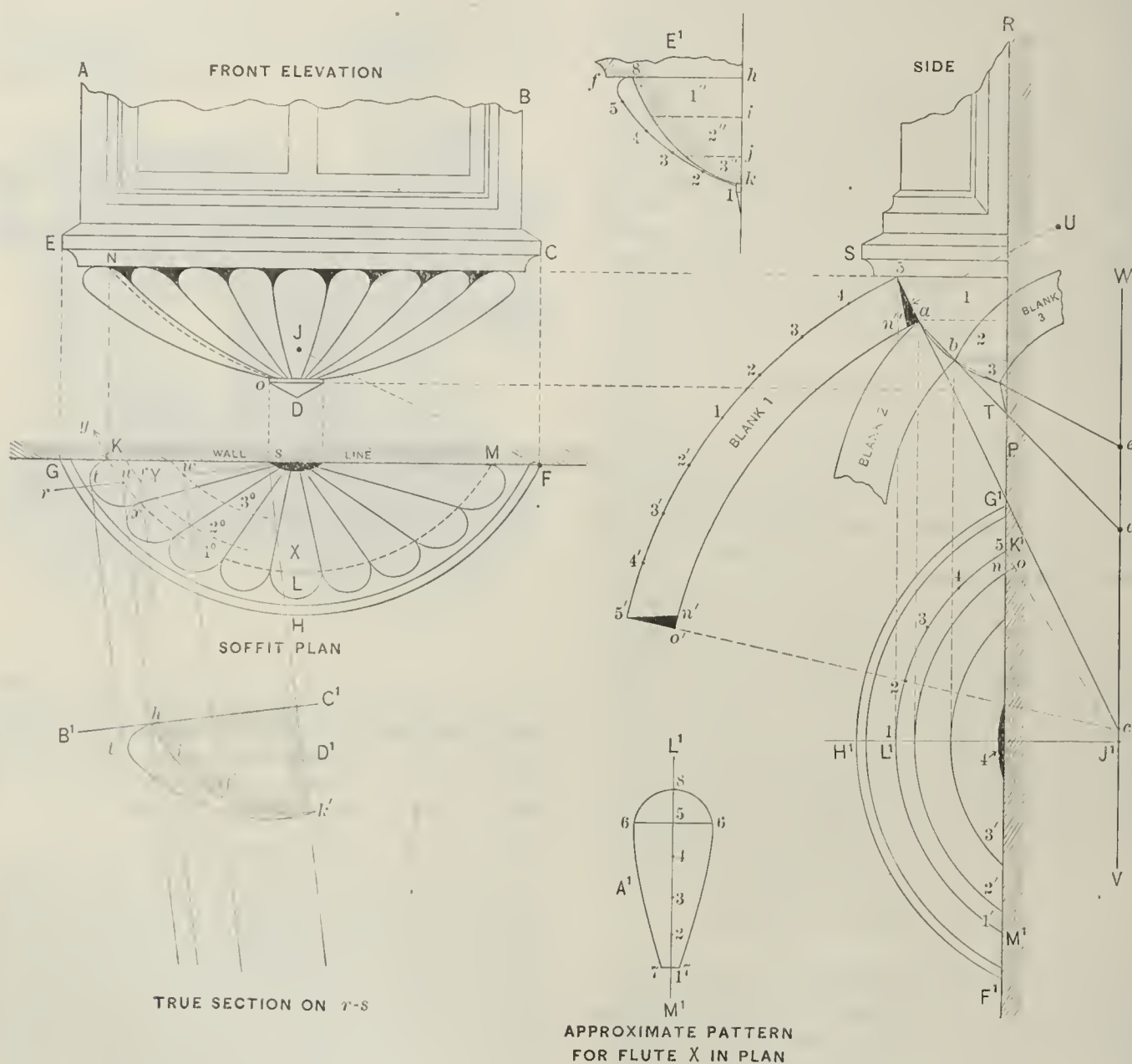
Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERNS FOR FLUTED BOTTOM OF CIRCULAR BAY.

From D. R., Troy, N. Y.—Will you kindly show me the way to lay out the patterns for the fluted bottom of a circular bay, as shown on the sketch which I send herewith?

Answer.—In the accompanying illustrations we have made a finished drawing from our correspondent's

it in the side view, placing the line G F in a vertical position, as shown by F¹, G¹, H¹ and J¹, letting the line K¹ L¹ M¹ represent the background, similar to K L M in soffit plan. Extend the line F¹ G¹, as shown by P R, which represents the wall line. From the front elevation project the heights of the moldings, as shown by the dotted lines S and T, and from L¹ in plan in side view, at right angles to H¹ J¹, erect a line intersecting the bottom of the cove at 5. Now, with the desired center as U, describe the arc 5 3, touching the desired points at top and bottom. This arc represents the background, to which the flutes should be soldered. This background will be made of flaring strips of metal, which can be raised if desired, but is unnecessary, because the flutes will cover the entire surface. For this reason divide the curve 5 3 into a number of equal spaces, to avoid sharp corners, as shown by the points a and b, thus making three flares, numbered 1, 2 and 3. To obtain the



PATTERNS FOR FLUTED BOTTOM OF CIRCULAR BAY.

sketch, in which A B C D E shows the front elevation of the bottom of the bay, and F G H the soffit plan struck from the center J on the line E C in elevation. Before the flutes can be placed in position a background must be made to receive them. The line of this background is shown in plan by the dotted line K L M, and shown approximately in elevation by the dotted line N O. These lines being established, divide the plan into the number of flutes desired, as shown, letting the circular heads or semicircles meet the dotted line K L M, as shown. From the plan project up the flutes in elevation, as shown. This is not necessary in practice, but is shown here to give a clear understanding.

The next step is to construct the side view, from which the radii and patterns are obtained. Take a tracing of the plan F G H, with the center point J, and place

radii for these three flares, draw lines through the points 5 a, a b and b 3, intersecting the line V W, drawn parallel to the line F¹ G¹ through J¹ at points c, d and e, respectively. From the points a and b draw horizontal lines, intersecting the center line H¹ J¹ in plan, as shown. With J¹ as center and through these intersections draw the arcs 1', 2' and 3', which correspond to the flares 1, 2 and 3 in the side. For the pattern for flare 1 proceed as follows: With c as center and radii equal to c a and c 5 describe the arcs 5 5' and a o'. As the point 5 in side view is shown in plan by the arc 1', divide one-half of the arc 1' into equal spaces, as shown by points 1 to 5, and set off double these spaces on the arc 5 5' on blank 1, as shown from 5 to 1 and 1 to 5'. From 5' draw the radial line 5' c, cutting the arc a o' at o'. As the wall

line $G^1 F^1$ in plan crosses the arc at other than radial lines, so will the end lines of the blanks be other than radial lines. Therefore, from 5 in plan draw a radial line to the center J^1 , and extend the arc $2'$ to o . As the arc $2'$ represents the plan line of the point a of the flaring strip 1, measure the distance $o n$ in plan, and place it, as shown, from o' to n' and a to n'' in blank 1. Then the portion shown shaded will be that part which will be cut off the pattern. In precisely the same manner will the blanks 2 and 3 be developed, using the centers d and e , respectively, on the line $V W$, measuring on the arcs $2'$ and $3'$ in plan for the lengths of the patterns. After the blanks are developed they can be soldered together, using the arcs shows in plan as stays. Thus the arc $K^1 L^1 M^1$ in plan is soldered to the top of blank 1, the arc $2'$ in plan to the top of blank 2, the arc $3'$ in plan to the top of blank 3 and the shaded portion of 4 in plan to the bottom of blank 3. This forms the model to which the flutes are fitted, after which they are raised. The model is now divided into equal spaces, as desired, and lines drawn, with crayon or marking acid, to the bottom, so that a line is obtained as a guide for raising and fitting.

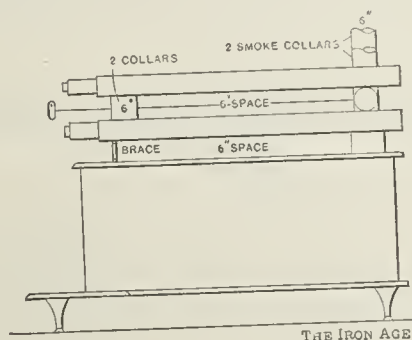
In getting out the patterns for the flutes, they will only be approximate, as some metals will stretch more than others, according to the gauge in use, and will therefore require some trimming. With the model as above made an experienced hand would require no further stays, but would raise to the lines shown on the model. But one less experienced would require stays through the center of each one of the flutes in soffit plan, which would be tacked with solder in its proper position on the model and the flutes raised accordingly.

As these stays are also used for obtaining the amount of material for the flutes, we will show the method of obtaining the stay for the center flute X in soffit plan, and to avoid a confusion of lines, diagram E^1 shows a reproduction of the flares 1, 2 and 3 in side view, as shown by $1''$, $2''$ and $3''$ in diagram E^1 . It should be understood that this center flute X is the only flute on the bay which is symmetrical, all the others being cut by the arc $K L M$ at other than at right angles to their axis. For example, note the axis line $r s$ in the flute Y . Now draw the section of the flute X in diagram E^1 , as shown by 1 to 8, which also represents the stay. Divide the section into equal spaces, as shown by the small figures 1 to 8. Now draw any vertical line, as $L^1 M^1$, in diagram A^1 , upon which place the stretchout of the section of the flute in E^1 , shown from 1 to 5, as shown from 1 to 5 on $L^1 M^1$ in diagram A^1 . At right angles to $L^1 M^1$ and through points 1 and 5 draw the lines 6 6 and 7 7, respectively, making 6 6 equal to the stretchout of the semicircle L of the flute X in soffit plan, and the distance 7 7 equal to the stretchout of the flute X at its apex, shown in elevation at the bottom of J or measured direct from the model. From 6 to 7 on both sides in diagram A^1 draw slightly curved lines, as shown. Then 6 7 and 7 6 will be the pattern for the flute X in plan. This should be raised with the raising hammer and blocked until it fits the stay and model, as before explained, and will require a little trimming. In some shops the circular top of the flute is soldered separately to the flute by using a quarter ball. If care is taken this separate head can be soldered so that the seam will not be noticed; but to make a first-class job the circular head is hammered directly on the flute, by adding to the pattern in A^1 the semicircle 6 8 6, using 5 as the center. As each one of the flutes in plan becomes longer as they reach the wall line, it becomes necessary to obtain a true section through the center of each flute to obtain the amount of stuff required; also to use as a stay in raising. In this case four different stays would be required, and, for example, we shall show the method of obtaining the true section on $r s$ in plan, the same principles being applied to the other three. Therefore, through the flute Y draw the center line $r s$. Now, with radii equal to $J^1 1'$, $2'$ and $3'$ in plan in side view, and with J in front elevation as center, describe partial arcs in soffit plan, as shown by $1''$, $2''$ and $3''$, intersecting the line $r s$ at u , v and w . At right angles to $r s$ and from the intersections u , v , w and s draw lines indefinitely, as

shown. Parallel to $r s$ draw any line, as $B^1 C^1$. Now, measuring in each and every instance from the line $f h$ in diagram E^1 , take the distances to lines i , j and k , and place them on similar vertical lines drawn at right angles to $r s$, as shown by similar letters, h' , i' , j' and k' . Trace a line, as shown. Then $h' k' C^1$ will be the true section on $r s$ in plan. Around this section draw the section of the flute, as shown. Then in the same manner, as shown in diagram A^1 , obtain the approximate pattern, being careful to note that the length of the one side of the flute Y , shown from s to y , is greater than from s to x , as is also the case in the other flutes.

CONSTRUCTING A CHURCH FURNACE.

From John Kanuck, Connellsville, Pa.—Replying to the inquiry of "A. S.," in *The Metal Worker* of November 2, regarding the use of a box stove for a furnace, I would advise, don't do it, if you want a job that will be a credit to you and bring you further business. So far we have never seen a box stove that would stand



Constructing a Church Furnace.

the test of being inclosed in a brick air chamber and not become in a short time so badly warped and cracked by the heat that it would be useless, or nearly so. If, after he has considered this statement, he should still wish to use the stove, I would advise him to make two flat drums of nearly equal length and of the full width of the stove and about 5 inches deep. Connect the bottom side of the lower drum at the back with the stove by means of an 8-inch collar, long enough to raise this drum about 6 inches above the top of the stove. The lower drum should be connected with the upper drum at the front end by two collars, each 6 inches in diameter and long enough to leave a space of some 6 inches between the two drums. Two 6-inch collars can be put on the top side of the upper drum at the back, so as to receive a pipe to run to each of the two chimneys. I would also have a collar connecting the two drums at the rear end so as to secure a direct draft for starting the fire. In this collar I would place a tight damper with a rod running through the front brick work, so that by manipulating the damper a direct or indirect draft can be effected, as desired. The drums or radiator above the stove should be made heavy and tight, and they should have openings in the front end for removing soot and ashes and for general cleaning. These openings must be fitted with good tight covers so that air cannot enter to interfere with the draft. Build the brick casing of the warm air chamber so as to leave a space of 5 or 6 inches on both sides and the back end of the stove, and if possible have the roof of the air chamber 15 or 18 inches above the top of the radiating drum. I would place one register of ample size in each aisle of the church and connect it with the furnace with a pipe 18 inches in diameter. Each of these pipes should have a good tight damper in it very close to the furnace, so that these pipes can be shut off when the furnace is used for heating the basement. There should be two 18-inch collars placed in the brick work in the basement having tight covers on them, which are to be taken off when the Sunday school room is to be heated.

From G. R., Shoal Lake, Manitoba.—In answer to the letter of "A. S." in *The Metal Worker* of November 2, asking advice as to how to heat a church with a box stove, I beg leave to give him a little of my experience.

I would decidedly advise him not to connect the smoke pipe to two separate flues. He should make one flue take the smoke. If he uses two flues one will draw against the other, with the result that there will be no fire, but pails of condensation and soot. I would also advise him to use two registers, one in each aisle, and to place the furnace as near as possible directly under them, so as to make the hot air pipes short. They should be 14 inches in diameter and connect with 14 x 19 inch registers. I would also advise him to take two cold air pipes back from the church floor to the furnace and make them as short as possible. A ventilator should be put in the ceiling, to be opened when the church is too warm. An opening should be left at the bottom of the furnace to take cold air from the Sunday school room. I would advise a collar on the top of the furnace to allow hot air to come when the Sunday school room is to be heated. A horizontal drum should be placed over the top of the box stove, with a division in it to secure an indirect draft, and arranged with a damper to be operated when a direct draft is needed. A cold air pipe of ample size should be taken from the northwest quarter, and should have a slide to shut off when it is not needed.

CHIMNEY VENTILATORS FOR BACK DRAFT?

From C. E. M., Hanover, Pa.—I would like to ask for a remedy for a back draft to a chimney other than the one given to "Y. K.," in *The Metal Worker* of November 16. I have had a chimney that acts the same as the one described by "Y. K.," and I removed the stone slab from the top of the chimney altogether, but it did no good.

Note.—Those of our readers who make a specialty of dealing with troublesome chimneys are invited to give their views on this subject. It is probable that any of the several different manufacturers of ventilating chimney tops would recommend the use of some special form of chimney top, after they had determined the cause of the trouble. Naturally, a man at the place who can see the surroundings of the chimney and note the effect of trees, hills or buildings near at hand, can readily determine the movement of the air currents which interfere with the draft. If the trouble is most pronounced in strong winds there can be little doubt but that a ventilating chimney top so constructed as to create an exhaust draft will prove a remedy if properly applied to the chimney. There are some forms of chimney tops that are claimed to utilize the air which rises along the outside of the chimney top and becomes heated for entering through special openings and creating an exhaust current even in still weather. However, this is a subject which those who have had a long practical experience with chimney troubles can best discuss, and we hope that there will be no lack of assistance from such of our readers to this correspondent.

Power Development at Niagara Falls.

When, on October 4, 1890, ground was broken at Niagara Falls, N. Y., for the tunnel power development of the Niagara Falls Power Company, and the plans for the development were gradually unfolded to public view, it was generally recognized that it was destined to be a marvelous installation that would be erected to place the force of the river within the reach of man. The eleven years that have elapsed have served to meet all expectations in this respect, and it has been found that the 5000 horse-power turbines and the 5000 horse-power generators have answered the expectations anticipated of them. When these machines were built they were the peers of all that man had ever created. They denoted a remarkable progress, and from the time they were installed to the present day they have attracted the attention of scientists of the world.

Now a new development is projected for the Canadian side at Niagara, and the experience of years and the advancement in electrical science are to be drawn upon to make the proposed new Canadian plant a twentieth

century marvel. Acting upon the advice of Mr. Buek, electrical director, the Canadian Niagara Power Company have adopted plans for generators of 10,000 horse-power capacity each, and the General Electric and Westinghouse companies are figuring on them. Thus each of these generators will have double the capacity of the generators now in use in the station of the Niagara Falls Power Company. Further facts about these wonderful machines are not at this time available. The tunnel work on the Canadian side is going forward rapidly, and the contract for the new wheel pit will be awarded, in all likelihood, within the next fortnight.

That there is continuous progress in the electrical line is evident from the fact that the new generators the General Electric Company are now building for the Niagara Falls Power Company are guaranteed not to short circuit. This is a feature of vast importance, for the short circuiting of the 5000 horse-power dynamos is the greatest source of danger in the station, and only recently one of the big dynamos was burned in this way.

William B. Rankine, vice-president of the Niagara Falls Power Company, and other officials of the same company, have recently returned from a five weeks' trip to California, where, naturally, they carefully inspected the famous power transmission lines. Mr. Rankine expressed himself as greatly pleased with what he had seen in the far West and that the power transmission lines were very good. One transmission is about 160 miles, but is to be carried 200 miles. The voltage at present is 60,000, but the pressure on the lines is not so great as on the Niagara-Buffalo line.

Considering the California transmission lines inspected, it is interesting to observe that were the Niagara transmission line stretched out 200 miles it would go beyond Cleveland, Ohio, on the one side and down close to Utica in the interior of New York State. In Pennsylvania even Pittsburgh in one direction and Lock Haven in another might be touched, while in Northern New York Watertown might feel the beneficial effects. California is the possessor of a dry atmosphere and there is a lack of sleet storms, but Niagara has the power and surrounding the Falls there is a marvelous market to which the transmission lines may some day carry the product of the mammoth generators to a greater extent than to-day.

TRADE NOTES.

THE CONSOLIDATED PUMP COMPANY, Toledo, Ohio, will at once commence the erection of a new plant at Sylome avenue and the L. E. & W. R. R., comprising two buildings, 80 x 250 and 60 x 100 feet, respectively, for the production of Wood Pumps, Door and Window Screens and other specialties. The new plant will have double the present capacity and is expected to be ready for occupancy within 90 days.

THE JEFFREY MFG. COMPANY of Columbus, Ohio, with New York City branch at 41 Dey street, are sending out an illustrated folder advertising the Jeffrey Mixing Machinery for mortar and concrete. This machine is made in a number of styles and sizes suitable for all kinds of building operations.

THE MICA INSULATOR COMPANY, 218 Water street, New York, manufacturers of Micanite Plates, Segments, Rings, Washers, Tubes, Troughs, Cloth, Paper, &c., have issued a notice calling attention to the effect that they are the owners of a large number of patents in the United States, Great Britain and Germany covering Micanite, and that they manufacture Electrical Insulators from Mica Sheets. Their rights under these patents have been almost universally recognized by the trade generally, among their customers being the largest manufacturers of electrical machinery in this country and in England. The company state that they have begun suit against the Union Mica Company in the United States Circuit Court for infringement of their United States patents. The officers of the Mica Insulator Company are: Eugene Munsell, president; Franklin Brooks, vice-president, and Lewis W. Kingsley, treasurer. The company were awarded a gold medal for their exhibits at the Paris Exposition of 1900.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has advanced $1\frac{1}{2}$ c. for spot; demand is slack.
Copper is without change of any kind.
Pig Lead is quiet and firm.
Spelter shows no change.
Antimony is unchanged.
Nickel continues firm and active.
Aluminum is active at former prices.
Tin Plates are quiet and without change.
Black Sheets are still in heavy demand; jobbers' prices are slightly lower.
Galvanized Sheets are active and strong.
Sheet Copper continues active and firm.
Sheet Zinc is without change and in moderate demand.
Southern Foundry Iron was advanced 50c. a ton.
Hardware business is good in all seasonable lines and prices are well maintained.
Plumbers' Supplies are moving in good volume; prices keep firm.
Wrought Iron Pipe continues in good demand and prices are firm.
Galvanized Range Boilers of 30, 35 and 40 gallons have been reduced 10 per cent. in price.
Plumbers' Brass Work remains firm in price, with a good demand.
Solder has been advanced 1 cent a pound.
Building Papers have stiffened in price slightly on brisk demand.
Wire Nail prices are somewhat irregular.
Cut Nails are in fair demand and firm in price.
Wire still moves in good volume at former prices.
White Lead is less active and prices fairly steady.
Linseed Oil is still in short supply, but prices are a shade easier.
Spirits Turpentine is firm and rather quiet.
Rosin is slightly higher in price.

METAL MARKET.

NEW YORK, November 22, 1901.

Pig Tin.—Since our last report a corner in spot Tin was inaugurated by large interests in this city. The plan, it is said, was formulated about a month ago. Spot Tin was kept here below London parity until about ten days ago, in order to prevent shipments from London and to enable shipments to be made from here to the Continent. In that way the stock and the greater part of the shipments which can come in now were concentrated in one hand. It is now in the power of the controlling factor to dictate prices for spot delivery. In consequence of this condition prices have been advanced nearly 2c. a pound for Shot and 1c. for November delivery. The market here has been quiet, the buyers taking only small lots for immediate consumption. Straits Pig in small lots is now quoted at $28\frac{1}{2}$ c. to $28\frac{3}{4}$ c. per lb.

Copper.—Nothing has developed during the week to change the situation. Lake is still held at former prices. Buying is on a conservative scale, and rumors regarding the cutting of prices are less frequent. Small lots of Lake Ingot are quoted by jobbers at $17\frac{1}{4}$ c. to $17\frac{1}{2}$ c. per lb., and Casting Copper at $16\frac{3}{4}$ c. to 17c. The price of 17c., set by the Waelark Wire Company last week, is not accepted as the market figure by the balance of the trade. It is said that this company for some time have been selling Copper Wire below the regular market rate, this being possible through their connection with the Verde mines in the matter of raw material. The market price, it is said, has for some time been below

$18\frac{3}{4}$ c. Daily reports of the cutting of Copper prices have been circulated at a time when it was thought they would have the desired effect upon the Copper share market. The fact is that prices have not changed. It is still a waiting game on both sides. The report of the production of the Copper mines in October, contrary to expectations, showed an increase of over 10 per cent. over September, and was the largest monthly production on record. The European statistics were also a surprise, showing a very small decrease in stocks. This, in the face of our small exports and the steady shipment of Copper to this country, is held as an indication that the European consumption is still on the decrease, and the outlook for the near future in Europe is held to be anything but bright.

Sheet Copper.—An active demand is reported for Sheet Copper, which about keeps pace with the production, leaving little or no accumulation of stocks at mills or in jobbers' hands. Prices remain quite firm on the basis of 21c. per lb. for Sheet Copper from store.

Pig Lead.—The market for this metal is entirely unchanged. Business is rather slow, but prices are firmly maintained. American Pig in small lots is quoted at $4.62\frac{1}{2}$ c. to $4\frac{3}{4}$ c. per lb. St. Louis advices report no variation in that market from the quiet and steady tendency which has been the ruling condition for some time.

Spelter.—In another column details are printed of the proposed consolidation of Zinc smelters. The publication of this matter has had no appreciable effect upon the market so far, however. Business is dull and prices show no change from those ruling at the date of our last report. Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. St. Louis advices report that practically all the Zinc smelters are sold up to January 1, and prices are holding firm.

Antimony.—No change has taken place in this metal. Cookson's in small parcels is quoted at $10\frac{1}{2}$ c. to 11c. and Hallett's at $8\frac{1}{2}$ c. to 9c. per lb.

Nickel.—Is without change, prices continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—The demand for Aluminum continues active. Prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—Nothing that is new can be reported in connection with this market, except that deliveries from mills are coming in rather more freely, although hardly in sufficient volume as yet to satisfy the demands of consumers. The mills are still considerably behind in deliveries on their contracts, orders placed many months ago being still unfilled in many instances. New business is of a limited character, but the American Tin Plate Company are understood to have booked some good sized contracts for deliveries extending through the first quarter of the new year. The small trade in this vicinity is pretty active for the season, owing to the weather being favorable for outside work. Jobbers' prices continue largely nominal, but American Bessemer Coke Plates, 1C, 14 x 20, at New York or corresponding points, rule at about \$5.75 to \$6.25 per box.

Sheets.—The mills are beginning to catch up with back orders and shipments are being made with more promptitude. Nevertheless, deliveries are not yet adequate to the requirements of consumers. A scarcity still exists of certain kinds of Black Plates, for which a heavy demand is experienced by jobbers. Receipts from the mills are absorbed as quickly as they arrive. There is quite a heavy demand for Galvanized Sheets and the market is relatively stronger for this class of material than for Black Sheets. On the latter, jobbers' prices are about 10c. per 100 pounds lower, and No. 27 one-pass Cold Rolled Soft Steel Sheets are quoted in small lots at about

4.05c. to 4.10c. Galvanized Sheets rule at 65 per cent. to 67½ per cent. off the list.

Chicago advices are as follows: While progress is being made in the accumulation of Sheets in stock, the latter are not complete and receipts are often absorbed as fast as they arrive. Prices are without further decline. Some sellers continue to quote 3.50c., but these prices do not include all sizes. Many transactions are on the basis of 3.60c. to 3.75c. from store. Galvanized are firm at 65 and 10 to 70.

Old Metals.—A pretty good demand continues for Scrap Iron, but prices are without change. Scrap Brass and Copper are moving rather slowly at former prices. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	14¾c.
Light and Tinned Copper.....	per lb.	12¾c.
Heavy Brass.....	per lb.	9¼c.
Light Brass.....	per lb.	7½c.
Lead.....	per lb.	4 c.
Tea Lead.....	per lb.	3½c.
Zinc.....	per lb.	2¾c.
No. 1 Pewter.....	per lb.	17½c.
No. 2 Pewter.....	per lb.	8½c.
Tin Plate Scrap, per gross ton.....		\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....		10.50 to 11.00
Heavy Cast Scrap, per gross ton.....		10.25 to 10.50
Stove Plate Scrap, per gross ton.....		7.25 to 7.50
Burnt Iron, per gross ton.....		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Trade is active, in fact, exceedingly active for the season. Stocks continue to shrink under the heavy demand, and prices are strong with an advancing tendency. The Southern furnace companies have marked up their prices 50c. per ton on all grades and Northern makers are strongly inclined to take similar action. We quote: No. 1, \$16 to \$17.50; No. 2 X, \$15.15 to \$15.75; No. 2 Plain, \$14.65 to \$15; Tennessee and Alabama brands, No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—Trade in Pig Iron has been largely checked for the moment by the rise of 50c. in the price of Southern products, which took effect last week. For several days prior to the advance a number of orders for 500 to 2000 tons were entered, mainly for shipment during the first half of 1902. Some of the smaller purchasers say they will wait until after January 1 before buying any more iron. The position of the furnaces seems to be remarkably strong. Furnace men are not generally seeking trade and their output for the first half of the year is said to be well engaged. The Coke situation continues embarrassing for both furnaces and foundries. There is scarcely any of the better grades of Iron in the market. Prices, as corrected, are as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.50 to 16.00
Local Coke Foundry, No. 2.....	15.00 to 15.50
Local Coke Foundry, No. 3.....	14.50 to 15.00
Local Scotch, No. 1.....	15.50 to 16.00
Ohio Strong Softeners, No. 1.....	17.25 to 17.50
Southern Silvery, according to Silicon.....	15.90 to 16.40
Southern Coke, No. 1.....	15.40 to 15.90
Southern Coke, No. 2.....	14.90 to 15.40
Southern Coke, No. 3.....	14.40 to 14.90
Southern Coke, No. 1 Soft.....	15.40 to 15.90
Southern Coke, No. 2 Soft.....	14.90 to 15.40

PHILADELPHIA.—The market for Pig Iron has been remarkably strong during the week and prices are easily 25c. per ton better, and in some cases more than that. The demand has been very heavy and many large consumers have covered their requirements for the first quarter, and in some cases for the entire half of the coming year. All grades have been freely taken and Foundry Irons have been especially active, so much so that for this year's deliveries about everything that can be picked up is already engaged. Prices are strong at about the following figures for Philadelphia and nearby delivery, and about 25c. less for deliveries within a radius of 100 miles South or West: No. 1 X Foundry, \$15.75 to \$16; No. 2 X Foundry, \$15.50 to \$15.75, and No. 2 Plain, \$15 to \$15.25.

PITTSBURGH.—Foundry Iron is in active demand and prices are very strong. We quote No. 1 Foundry Iron at \$15.75 to \$16 and No. 2 at \$15.25 to \$15.50, Pittsburgh. We note a sale of 1000 tons of No. 2 Foundry Iron for shipment during the next four months at prices equal to about \$15.15, Pittsburgh.

CINCINNATI.—There has been but one move of importance in the Pig Iron market the past week, and that was the advancing of all grades of Southern Iron 50c. per ton. In the present condition of the trade there is no question in regard to buyers paying the advance without much objection, and it is considered a very conservative move by most sellers. Some few furnaces had been asking higher prices for a week prior to the raise of last Friday, and they especially are pleased with the move. All that has been said in recent letters regarding general conditions can be reaffirmed to-day. With the exception of the scarcity of cars there is very little to complain of; buying has been moderately fair and there is a pressing demand for Iron for quick shipment. We quote f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.25
Southern Coke, No. 3.....	to 13.75
Southern Coke, No. 4.....	to 13.25
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.25
Southern Coke, Gray Forged.....	to 13.25
Southern Coke, Mottled.....	to 13.25
Ohio Silvery, No. 1.....	\$15.35 to 15.85
Ohio Silvery, No. 2.....	14.85 to 15.35
Lake Superior Coke, No. 1.....	15.35 to 15.85
Lake Superior Coke, No. 2.....	14.85 to 15.35
Lake Superior Coke, No. 3.....	14.35 to 14.85

ST. LOUIS.—The advance announced by the furnaces last week may have momentarily checked buying, but the same strong and steady demand ruling before the change is now apparent in the Pig Iron market. A noteworthy point is the marked substantial quality of the buyers, no speculative element being found in the market. Some transactions in special grades are reported at an advance of 50c. over the new figures just quoted. Some furnaces have requested their agents to take no more business for delivery this side of January 1. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.50 to \$15.75
Southern, No. 2 Foundry.....	14.75 to 15.00
Southern, No. 3 Foundry.....	14.25 to 14.50
Southern, No. 4 Foundry.....	13.75 to 14.00
No. 1 Soft.....	15.25 to 15.50
No. 2 Soft.....	14.75 to 15.25

CHICAGO REPORT.

Scrap Iron and Steel.—A feeling of uncertainty is quite noticeable among dealers. It is reported the Eastern Bar Association have formed a central purchasing agency for the purpose of buying what Scrap is needed by the different mills represented in the Association. It is stated that each mill will report their requirements 30 days in advance and in this way prevent prices being bid up. On the other hand, the Old Material dealers held a meeting in Cincinnati last week and adjourned to meet in New York on the 21st, and some interesting developments are looked for before the week is out. In view of the situation, as above outlined, the market is naturally quiet and prices are unchanged. We quote dealers' buying prices in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	to 8.00
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.00 to 10.00
Old Gas Pipe and Boiler Tubes.....	10.50 to 11.50
Cast Borings.....	4.50 to 5.00
Turnings.....	9.50 to 10.00
Horseshoes.....	to 13.00

Old Metals.—There is practically no demand for Copper and Brass, and while prices are not quotably lower, they are a trifle softer. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14¾c.
Copper Bottoms.....	13¾c.
Copper Clips.....	14¼c.
Red Brass.....	13¾c.
Yellow Brass.....	9¾c.
Red Brass Borings.....	11½c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3¾c.
Zinc.....	2.80c.
Tin Foil.....	20 c.
Pewter, No. 1.....	17 c.
Pewter, No. 2.....	14 c.

Old Rubber.—Not much is doing in this department. Quite a surplus has developed in Rubber Shoes, and they are quoted ¼c. lower than last week. Dealers expect a further shading in the price of Rubber Shoes before the week is out:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7½c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—No change to note. Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lbs. in any quantity.

Anthracite Coal.—The demand is heavy, and no relief is in sight so far as the shortage of cars is concerned. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

Reports received from the various classes of trade indicate a satisfactory condition of things and a very general activity. With the merchants it is a season when business is naturally of large volume and makes exacting demands upon those in charge. The approach of Thanksgiving, which is a precursor of the holidays, is accompanied by increased attention to preparations for Christmas and New Year trade, of which many merchants are making more of late than heretofore. In this they are encouraged by the existing prosperity, which puts the people generally into an exceptionally good position to purchase articles of the better grade or of luxury. On this account the indications are that business of this character with the increased attention given to it by hardware merchants will be unusually large. There is thus naturally a good deal of buying for the holiday trade in connection with the activity in winter goods generally. Among the increasing number of houses who buy well in advance of the season such lines as poultry netting, lawn mowers, steel goods, wire cloth, &c., are receiving especial attention, and the volume of business thus doing is heavy. There still continues to be a good deal of difficulty in getting certain classes of goods as fast as wanted, but the supply is catching up with the demand, and there is a prospect in some lines in which the manufacturers have been badly behind their orders that the trade will soon have little reason for complaint. There are, however, many who believe that in a good many lines there will next season be more or less scarcity if trade attains the volume anticipated. The general conditions throughout the country are most satisfactory.

NOTES ON PRICES.

Wrought Iron Pipe.—The demand for Wrought Iron Pipe has been steady and in good volume this week. The mills are getting abreast of their orders and there is less scarcity to be noticed than has been reported since the labor troubles at the mills began. Prices are beginning to show a slight decline with the jobbing trade, but mill prices remain stationary. It seems to be a settled conviction on the part of the jobbers that there will be no change in manufacturers' prices. The prospects are for a good, steady business until late in the spring of next year, and it is said that the work now in course of construction, together with that already projected, will consume the entire output of all the various mills now in actual operation. The mills of the National Tube Company are being operated to their fullest capacity, and it is said that this condition of affairs is likely to prevail for the next three months.

Galvanized Range Boilers.—The Range Boiler Association, at a meeting in New York City on November 19, reduced the price of the 30, 35 and 40 gallon Boilers

10 per cent. This reduction was brought about by competition outside of the association. It seems that the manufacturers outside of the association do not make a full line of different sizes of the Boilers, their entire energy being concentrated on the production of the three sizes upon which the prices have been changed. According to a statement made by a prominent member of the association, this move on the part of the association will practically put the outsiders out of business, and he further says that the price of the steel sheets from which the Boilers are made will not allow the outsiders to make up their goods and market them at these prices with any kind of profit to themselves.

Plumbers' Brass Work.—A meeting of the Brass Association will take place in Washington, D. C., the second week in December, when it is expected that the present prices will be reaffirmed. There seems to be no change whatever in the market conditions. Considerable effort is being made on the part of the various committees in the association to get the outside manufacturers into the organization. The association, it is said, is gaining in membership, and none of the older members have left it. Two of the largest manufacturers who are outside of the association are thoroughly in accord with it in regard to prices and terms.

Solder.—In consequence of the sharp advance in Pig Tin, the manufacturers of Solder have advanced prices about 1-cent a pound. Half and Half, guaranteed, is now quoted in a retail way at 18 to 18½ cents per pound and No. 1 at 15 to 17 cents.

Lawn Mowers.—The indications are for a satisfactory season in Lawn Mowers, with a good volume of business at reasonably remunerative prices. The trade apparently did not carry over a great many goods from last season, and the jobbers and larger retailers are showing a disposition to buy in somewhat more than the usual quantities. There continues to be a large demand for the cheapest grade of Mowers, which are, as a rule, sold at very close prices, leaving the manufacturers only a narrow margin of profit. These goods are necessarily of an inferior quality and serve their purpose for only a comparatively short time. While dealers continue to handle them in large quantities, there is said to be something of a tendency toward better goods, as the trade are becoming more critical and recognize the better value of the higher grades. The prices of this class of Mowers are slightly higher than last season, owing to the higher price of Iron and advances which have taken place in labor. There were, however, early in the season, a good many orders taken at about the same prices as last year, but there have been subsequent advances of 10 or 15 cents. Competition between the manufacturers is keen, which keeps prices down to a close figure.

Building Paper.—There is some stiffening in prices on this class of goods, a complaint being that it is difficult to get deliveries from the manufacturers on account of the brisk demand, while the congested state of the railroads, owing to a shortage of cars, further complicates matters. In car lots Rosin Sized Sheathing is being offered at \$25 to \$28 per ton, some quoting as high as \$30 and \$35 in smaller lots. In Tarred Roofing, single-ply, a fair price at manufacturing points is \$25 per ton; two-ply, per roll, 40 cents; three-ply, per roll, 60 cents; no freight allowance. Slaters' Tarred Felt is quoted at \$27 per ton in car lots, with an advance of 5 per cent. on smaller purchases.

Gasoline Fire Pots and Torches.—The Clayton & Lambert Mfg. Company, Detroit, Mich., manufacturers of Gasoline Fire Pots and Torches, issued new prices on their products under date of November 19, 1901.

Wire Nails.—There is a constant demand for Wire Nails, and orders are mainly for small lots, owing to the uncertainty felt by buyers regarding the future of the market. Prices are not uniform over the entire country, owing to competition, but regular prices are adhered to as closely as possible by the largest producers. In the New York market there is more or less irregularity in prices. Small lots from store are quoted at \$2.35 to \$2.40 per keg.

Cut Nails.—The market for Cut Nails continues firm.

and there is a fair demand considering the season. Small lots from store, New York, are quoted at \$2.20 to \$2.25 per keg.

Wire.—A fair amount of business is still being done in Plain Wire. Concessions in prices are said to be made for desirable orders and at competitive points. Small lots of Plain Wire in New York, however, are still quoted at 2.60 cents, and Galvanized at 3 cents.

White Lead.—There is a perceptible falling off in the demand for White Lead in Oil, incident to the restricting of outside work with the advance of the season. The market continues fairly steady for small lots of White Lead in Oil, which are quoted at 7 to 7¼ cents per pound.

Linseed Oil.—The supply of spot Oil is yet inadequate to fully supply the moderate demand. There is a difference of opinion among the trade regarding the future of the market. The opinion is expressed by some that after the first of the year prices will be much lower. On the other hand, it is said that 60 per cent. of the new Flaxseed crop has been purchased by crushers at the high prices which have been ruling, and that, in consequence, the crushers cannot afford to let the market fall off to any great extent. However, the market for spot Oil is easier. Raw Oil in small lots is quoted at 61 to 62 cents and Boiled Oil is 2 cents advance on Raw.

Spirits Turpentine.—The demand for Turpentine has been comparatively light during the week, the buying being confined to small lots. The market is firm at 38 to 39 cents per gallon for moderate sized quantities from store.

Freezers.—Prices of Ice Cream Freezers for 1902, just issued, are the same as those of last season, except in the Toy Freezers, which have been advanced slightly.

RAPID work is being done on the additions to plants and the building of the new mills by the Labelle Iron Works, at Steubenville, Ohio. The company recently increased their capital stock to \$3,000,000, and are putting in a new open hearth steel plant and blooming mill and are adding a tube mill. The Labelle Iron Works are not in any way identified with the Pope Tin Plate Company, now building a plant in Steubenville, but will probably sell material to that company.

The forty-fourth meeting of the American Society of Mechanical Engineers will be held in the society's parlors, 12 West Thirty-first street, New York, December 3 to 6, 1901. Secretary F. R. Hutton has issued a programme covering the subjects which will be discussed and the papers which will be read at this meeting.

Charles M. Schwab, president of the United States Steel Corporation, has agreed to donate \$50,000 toward the erection of a Y. M. C. A. building at Vandergrift, Pa., where the largest of the sheet plants of the American Sheet Steel Company is located.

At Pittsburgh, in the case of the Pittsburgh Supply Company against the Pittsburgh Meter Company, the Circuit Court found in favor of the plaintiff. This finding was reversed by the United States Circuit Court of Appeals, and the bill of the complainant was dismissed.

The men employed in the Monongahela Works of the American Tin Plate Company, on the South Side, Pittsburgh, are still annoyed a good deal by the strikers, and recently it was found necessary to ask for additional police protection for the men.

The Zeman Iron Works, at 1590 Broadway, Cleveland, Ohio, established in 1895 by M. Zeman, were incorporated on October 12. The name of the new company is the Zeman Iron Works Company. Mr. Zeman was elected president and will attend to the mechanical department. J. H. Nieding, formerly of the oil firm of

Schofield, Shurmer & Teagle, is secretary and treasurer. The new company have added considerable machinery to the former equipment of the works and expect to secure a larger part of the benefits resulting from Cleveland's building boom. They are manufacturers of wrought iron fences and of builders' iron and wire work generally.

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Asphalt Ready Roofing Co., 136 Water St., N. Y.
- Roofing Cement and Paint.**
Callahan, Geo. & Co., 218 Front Street, N. Y.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.
- Roofing Cork.**
Stowell Mfg. Co., Jersey City, N. J.
- Roofing and Siding, Iron and Steel, Corrugated and Plain.**
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Iron & Steel Co., Cleveland, O.
Gumme, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
- Roofing Nails.**
Salem Nail Co., 279 Pearl St., N. Y.
- Roofing Slate.**
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
G. nuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.
- Schools and Colleges.**
International Correspondence Schools, Scranton, Pa.
- Screens.**
Harrington & King Perforating Co., Chicago, Ill.
- Shears, Sheet Metal.**
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
- Sheet Metal Machinery.**
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

Miner & Peck Mfg. Co., New Haven, Ct.

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Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

First-class SALESMAN to travel and sell a large line of stoves, ranges and furnaces in the New England States; one who can sell goods may address, with references, "W. H. G.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

A good, steady PLUMBER and GENERAL JOBBER for country town. A. A. Langille, Mahone, N. S., Canada. Nov. 23

TRAVELING SALESMEN visiting hardware and house furnishing dealers to sell our Perfect five stops; are ready sellers; will pay liberal commission. G. A. Higgins & Son, Galesburg, Ill. Nov. 23

Competent FOREMAN for galvanized iron shop; give references. American Blower Company, Detroit, Mich. Nov. 23

First-class STEAM and HOT WATER ENGINEER who can sell, lay out and superintend the construction of work; a competent man may address, with references, "H. N. C. Co.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

Two good SLATE ROOFERS who also can do sheet metal work. The Rudolph & Son Company, 43 Michigan street, Cleveland, Ohio. Nov. 23

A good, steady, A1 TINSMITH, ROOFER and FURNACEMAN; one who can cut his own patterns and lay out his own work; must be strictly sober; state age and experience and wages expected for a steady job the year round; nine hours. P. O. Box No. 1, Ocean City, N. J. Nov. 23

FOUNDRY SUPERINTENDENT by a Pennsylvania stove house; must be a thoroughly practical man, competent to direct expert molders in the best methods of producing true, smooth castings; must have a competent knowledge of irons and cupola management and ability to manage a foundry economically and yet get out its full capacity in good castings; a man who can keep men in good temper yet manage them to get their highest efficiency; a man of modern ideas, stable character and reliability can find permanent employment. Address "Stove Founder," care *The Metal Worker*, New York. Nov. 23

A New York house want a first-class REPRESENTATIVE for the building and contracting trade of New York and vicinity for 1902. "First-class," care *The Metal Worker*, New York. Nov. 23

CORNICE CUTTER; A1 man; one who understands directing a large force of men. "W. A. R.," care *The Metal Worker*, New York. Nov. 23

A CREDIT MAN familiar with Western hardware trade, by a leading wholesale house; state age, experience and references, also salary. "K. M.," care *The Metal Worker*, New York. Nov. 23

Experienced ESTIMATOR; one who understands all branches of the cornice business, also capable of estimating slate and tile roofing; good salary to the right man; state age, experience, &c. Box 172, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

FOREMAN, energetic, thoroughly experienced, up to date steel range maker. Address, with references and salary expected, Box 169, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

FOREMAN; an energetic and thoroughly experienced, up to date steel range maker. Address, with references and salary expected, Box 170, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

SHOP FOREMAN; to take entire charge of new shop for erection of stoves, furnaces and ranges; steady position guaranteed to the right man. "Shop Foreman," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

STOVE REPAIR MAN; one thoroughly acquainted with repairs of all kinds made in the Pennsylvania district; good salary to a first-class man; none other need apply. "Stove Repair Man," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

A young man familiar with stoves to learn to be a traveling salesman. Jas. Bagley, Bedford, Mass. Nov. 23

FLOOR MAN; to take charge of sale of stoves, heaters and ranges, wholesale and retail; must be experienced and first-class; no other need apply. "Floor Man," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

Several good CORNICE WORKERS and TINSMITHS, at once; good wages for nine hours' work. Address or call with tools ready to go to work, H. E. Wieber, 56 Broadway, Rondout, N. Y. Nov. 23

At once, four or five good CORNICE MAKERS; will pay first-class men \$3 per day; union shop; nine hours per day; no strike; come at once prepared to go to work; job will last all winter. Columbia Roof & Paving Company, Columbia, S. C. Nov. 23

SLATE ROOFERS, at once; none but first-class men need apply. Williams & Manogue, Troy, N. Y. Nov. 23

SHEET IRON WORKER; a steady job for good mechanics; state wages wanted and experience; also a good CUTTER or WORKING FOREMAN. "O. B. P.," care *The Metal Worker*, Cleveland, Ohio. Nov. 23

Two boys, 17 to 21, who have worked in country jobbing shop or at range work and furnace heating, to learn trade and work in stove repair store; wages \$4 to \$7, according to experience and ability, or \$3 and board; state age, experience or what you think you can do, &c. "N. C.," 13 Tompkins place, Brooklyn, N. Y. Nov. 23

Young man, 20, for stove and range work and furnace heating business, to learn trade and work in store; state experience, expectations, which must be low till ability is proven. "Clifford," 96 Smith street, Brooklyn, N. Y. Nov. 23

A young man for office work with some experience in the stove business; one who is ambitious to work and build himself up. "New York City," care *The Metal Worker*, New York. Nov. 23

TIN and SHEET IRON WORKER; thorough good, all around man; \$3 per day with steady work to right party; reference required. T. W. Dorsett, 1113 Clinton street, Hoboken, N. J. Nov. 23

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of a large stove plant; state experience, reference, age, &c. "Trade-Mark," care *The Metal Worker*, New York. Nov. 23

At once, two STOVE PATTERN FILERS; good wages. The A. T. Nye & Son Company, Marietta, Ohio. Nov. 23

AT ONCE, PLUMBER; one who can do lead work; steady work and good wages to satisfactory man; must come at once. Grant Hill, Leechburg, Pa. Nov. 23

At once, first-class PLUMBER; steady work and good wages to the right man. J. B. Crowl, 211 East Main street, Alliance, Ohio. Nov. 23

AT ONCE, a thoroughly good TINSMITH must have full knowledge of country and furnace work, be able to cut his own patterns and to be a hustler; a married American man preferred; steady job for right man. W. H. Sniffin, White Plains, N. Y. Nov. 23

SALESMAN; apply by letter only; give age, experience, salary expected and references; please do not apply unless you have had actual experience on the road selling to the trade. Detroit Stove Works. Nov. 23

SALESMAN of ability to sell an established line of hot water, steam and hot air goods in New England territory. "Passaic," care *The Metal Worker*, New York. Nov. 23

Good, steady, A1 PLUMBERS; will pay \$4 per day with nine hours; I want first-class men that understand their business and are rapid with their work; good men can have steady employment; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Nov. 16

SALESMAN of unexceptional ability to take charge of Boston office and cover adjacent New England territory, representing a line of cast iron, steam and water house heating boilers of highest reputation and having an established trade. Address, with references, "M. B. H.," care *The Metal Worker*, New York. Nov. 2

SITUATIONS WANTED.

Young man, thoroughly conversant with the wholesale steam and hot water heating trade, desires permanent position; has been connected with boiler house; is an expert stenographer and typewriter; can make plans and act as floor salesman. "Manifold," care *The Metal Worker*, New York. Nov. 23

By a good, practical TIN and SHEET IRON WORKER with 22 years' experience for inside and outside; married; German; steady position desired; please state wages. Geo. Beinkampen, 75 Milne street, Bridgeport, Conn. Nov. 23

A good PLUMBER wishes work in city or country; ten years experience. Thomas McSpedon, 328 East Sixtieth street, New York. Nov. 23

As SALESMAN with some good house; have had ten years' retail and 15 years' wholesale experience in hardware, tinware, stoves and house furnishing business; speak German and English. "Hustler, 123," care *The Metal Worker*, New York. Nov. 23

Steady job by A1 TINSMITH and SHEET IRON WORKER; 13 years' experience, two years as foreman; can do electro plating and furnace work; would like to take charge of tinsmithing department of some large factory in or near New York City; at work at present but would like a change; strictly temperate and reliable; can furnish first-class reference. "Mechanic," 1372 Brook avenue, New York. Nov. 23

By a TINNER and GALVANIZED IRON CORNICE WORKER; can also do slate work; will correspond with a view of securing a steady job. Chas. J. Greer, 370 East Union street, Circleville, Ohio. Nov. 23

By ENAMELER with 15 years' experience as foreman for concern making enameled ware or signs; capable of making granite ware, all known colors, including red. "E. W. A.," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Nov. 23

By a TINSMITH and FURNACEMAN as foreman in a good shop; can do all kinds of work belonging to the trade and make estimates on the same; 19 years' experience; 35 years old; married; Wisconsin preferred. J. A. Zingsheim, 1327 Cherry street, Green Bay, Wis. Nov. 23

By a first-class ENAMELER with 25 years' experience. H. H. Langewisch, Laurel Hill, Queens County, N. Y. Nov. 23

To represent manufacturers as their agents on the Pacific coast, strictly on commission, the following lines: Steel ranges, up to date air tight heaters, steel and cast hollow ware, stove pipe, elbows, dampers, rods, bolts, urns or kindred lines. What have you got? "S. A. M.," 748 First street, Portland, Ore. Nov. 23

A practical man with 16 years' experience wishes a position as SUPERINTENDENT or FOREMAN in a cornice or skylight shop; can do drafting, cutting, estimating, also can handle men to advantage. "H. J.," care *The Metal Worker*, New York. Nov. 23

By SLATE and TILE ROOFER; 16 years' experience. C. O. Wilson, 259 Central avenue, Norwich, Conn. Nov. 23

By an industrious married man, at steam, hot air, hot water, heating range and pump work; tinning, slate roofing and jobbing. "B.," Bellport, N. Y. Nov. 23

By first-class STEAM and HOT WATER FITTER with some knowledge of plumbing; can wipe true, neat joint. "Fitter," 411 Seventh avenue, Charleston, Ill. Nov. 23

As TRAVELING SALESMAN; by a young man who has had 15 years' experience in retail stove and tinware business; desires position with a good wholesale stove, sheet metal or tinware house; can furnish very best of references. Box 126, Fort Wayne, Ind. Nov. 23

As SALESMAN for stove manufacturing company; best of reference; five years' experience. "Salesman," care *The Metal Worker*, New York. Nov. 23

A young man with six years' experience in both in and out door work wants a steady job as TINNER; country town preferred; can estimate work, make and work from plans, and am thoroughly capable of taking charge of shop; best of references; state wages. Edward Smith, Barnesville, Ohio. Nov. 23

By a practical man of long experience in the wholesale and retail stove trade, as COLLECTOR and SALESMAN, and can take charge of men on outside repair work; best of reference given. "W.," care *The Metal Worker*, New York. Nov. 23

BOOKKEEPER; aged 30; single; thoroughly experienced in manufacturing line; up to date methods; all around man; capable of taking charge of office; exceptional references; salary required, \$20 per week. "Bookkeeper," care *The Metal Worker*, New York. Nov. 16

As TRAVELING SALESMAN for a first-class plumbing or stove and heater company; have been in business 25 years and can furnish references. F. B. Smith, Mystic, Conn. Nov. 16

By a young man who has had six years' experience in the retail stove business; desires position with good wholesale house; can furnish very best of references. "W. S. W.," care Kearney, 161 Bridge street, Brooklyn, N. Y. Nov. 16

By a young man, age 29, as BOOKKEEPER or HEAD CLERK in a retail or wholesale hardware store; have worked in a hardware store for the past six years and am an experienced hardwareman; would like a position with a large firm; very best of reference furnished as a capable and trustworthy man. "Experience 119," care *The Metal Worker*, New York. Nov. 9

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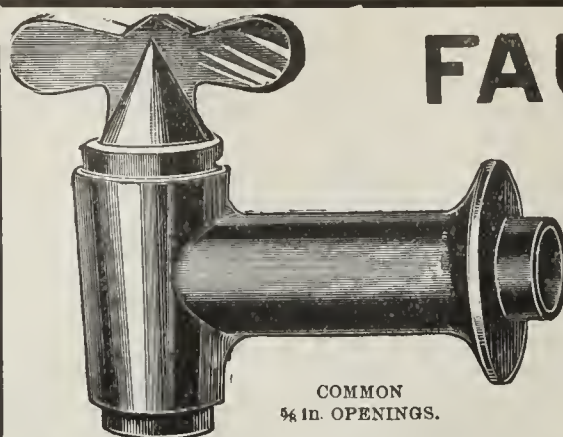
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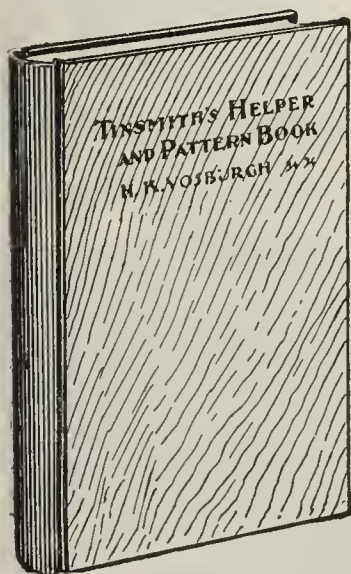
Alaska Refrigerator Co.	260 hands
Standard Malleable Iron Co.	250 "
Central Paper Co.	180 "
Thayer Lumber Co.	250 "
Sargent Mfg. Co. (Invalid Chairs)	100 "
Chase-Hackley Piano Co.	175 "
American Tin Plate Co.	500 "
American Rolling Mill Co.	400 "
Moon Desk Co.	130 "
Grand Rapids Desk Co.	300 "
Muskegon Valley Furn. Co.	165 "
Stewart Hartshorn Co.	
(Shade Rollers)	270 "
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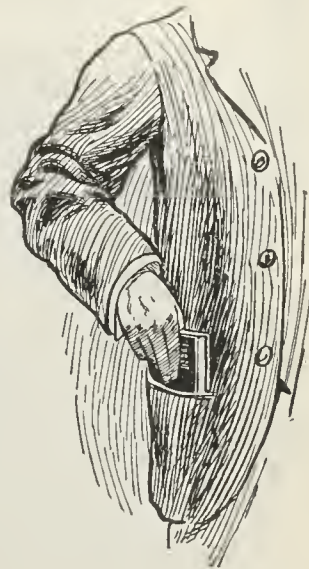
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We present a new and improved edition of this useful book, believing it to be one of the most important assistants to tinner and other mechanics that is published. The diagrams and patterns are now illustrated by means of new engravings, greatly improving the appearance of the book. The tables, rules and recipes have been carefully revised, these, with important additional tables, being printed from new type.

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The Tinsmiths' Helper is not intended to be a comprehensive treatise on sheet metal pattern cutting, which field is covered only by "The New Metal Worker Pattern Book," but it contains a collection of patterns of the most common occurrence, described in the plainest way. It meets the requirement of a simple hand-book for young tinner, and will be an invaluable aid to all sheet metal workers for the compilation of tables and rules alone. A list of the contents is given below.



DIAGRAMS AND PATTERNS.

To Find the Center of an Arc.
To Describe an Octagon Within a Given Square.
To Describe an Octagon Within a Given Circle.
To Describe Breasts for Cans.
Can Breasts.
Pattern for Cone.
To Describe Pattern for Flaring Vessels.
To Cut Hood for Stove Pipes.
To Describe Patterns for Flaring Tinware.
The Old German Rule for Patterns for the Cone.
Frustum of a Cone.
Flaring Vessel in Three Pieces.
Rectangular Funnel.
For Strainer Pail or Watering Pot Breast.
Scale Tray or Scoop.
To Find Length of Sheet Required for Oval Boiler. Common Method.
Oval Boiler Cover.
Measure Lip.
Steamer or Pitched Cover.

Heart with Square and Compass.
To Describe a Star.
Pattern for Cutting Balls. To Describe the Gores.
To Describe an Oval.
To Describe Oval with Diameters as 5 to 8.
To Describe an Oval. Two Other Methods.
To Describe Oval by Means of String, Pins and Pencil.
To Describe Pattern for Flaring Oval Vessels. Two Pieces.
To Describe Pattern for Flaring Article with Straight Sides and Round Ends. Two Pieces.
To Describe Pattern for Oval Flaring Vessel. Four Pieces.
To Describe Pattern for Flaring Hexagon Article.
To Describe Pattern for Flaring Square Vessel.
To Describe Pattern for Flaring Article with Square Top and Base a Rectangle. Two Pieces.

To Describe Tapering Octagon.
Flaring Article, Top and Base a Rectangle. Two Pieces.
Round Base and Square Top Article. Two Pieces.
Rectangular Base and Round Top Article. Square Base and Round Top Article. Two Pieces.
To Describe a Square or Right Angle Elbow. Two Pieces.
To Describe Elbow. Quick Method.
To Describe Three-Piece Elbow.
To Describe a Right Angle Elbow. Four Pieces.
Elbow in Five Sections.
To Describe Pattern for Obtuse Elbow.
To Describe a Tapering Elbow.
To Obtain Length of Piece for Tea Kettle Body.
Mode of Stringing Patterns.
String Pattern.
Description of Boiler Block.

EPITOME OF MENSURATION.

Mensuration of the Circle and Its Sections.

Mensuration of Surfaces.

Mensuration of Spheres.

Mensuration of Solids and Capacities of Bodies.

Mensuration of Cones and Pyramids.

Mensuration of Cylinders.

Mensuration of Polygons.

TABLES, RULES AND RECIPES.

Table of Gauges of Black Sheet Iron.
Table of Weight per Square Foot of Iron Plates, from 1-16 up to $\frac{1}{2}$ Inch Thick.
Rule for Finding Weight of Sheet Lead.
Table of Decimals Equivalent to the Fractional Parts of a Pound.
Table of Decimals Equivalent to the Fractional Parts of an Inch When Divided into 32 Parts; Likewise the Decimals Equivalent to the Fractional Parts of a Foot.
Table of Ordinary Dimensions of Galvanized Sheets.

Table of Weight of Galvanized Sheets.
Table and Rule to Ascertain the Weights of Pipes of Various Metals and Any Diameter Required.
Table of Weight per Foot of Lead Pipe.
Table of Net Weight per Box Tin Plates.
Table of Approximate Weight of Zinc Sheets.
Table of Relative Weights of Aluminum and Copper Sheets.
Tables of the Areas and Circumferences of Circles.
Table of Capacity of Cans 1 Inch Deep.

Rules for Calculating Circumferences.
Table of Weight of Water.
Table of Number of Barrels in Cisterns and Tanks.
Table Showing the Pressure of Water per Square Inch, Due to Different Heads, from 1 to 250 Feet.
Measures of Capacity and Weight.
Tables of Sizes of Tinware in the Form of Frustum of a Cone.
Table of Effects upon Bodies by Heat.
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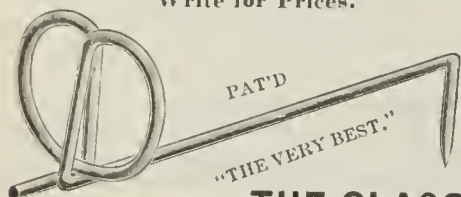
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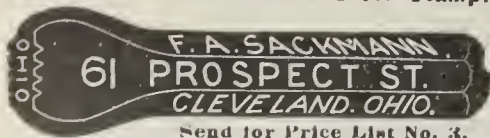
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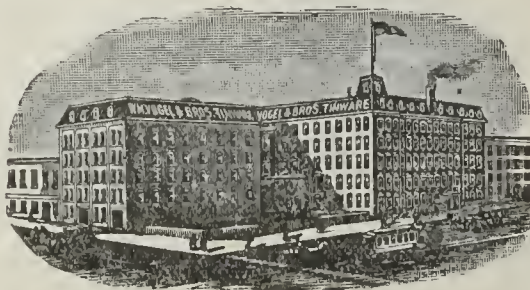
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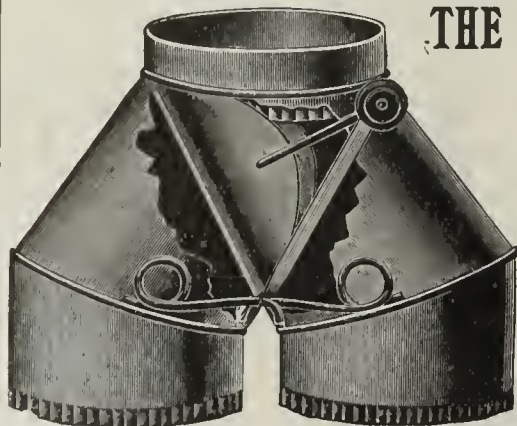
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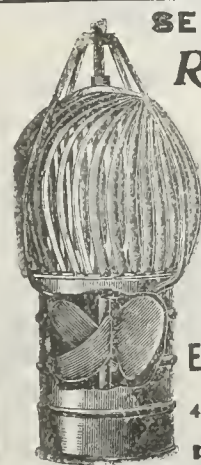
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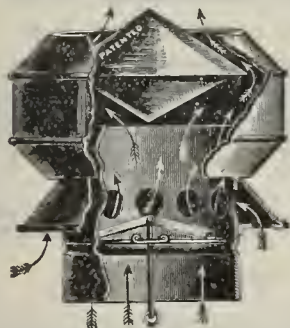
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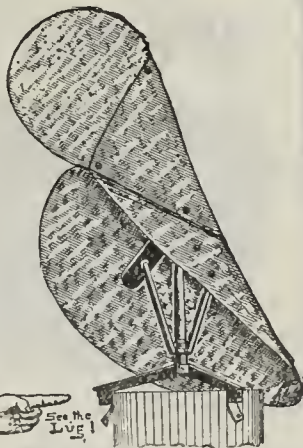
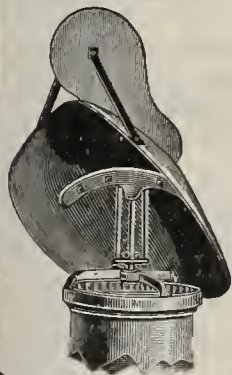
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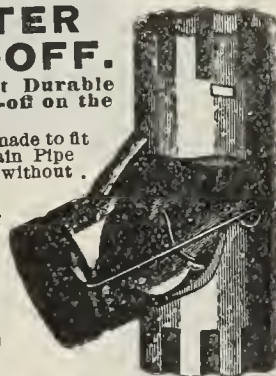
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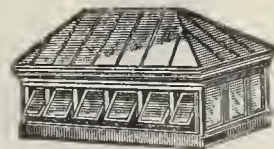
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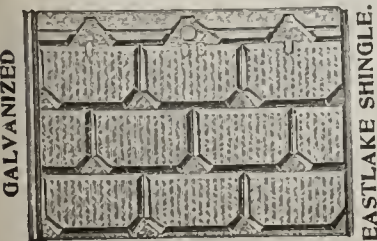
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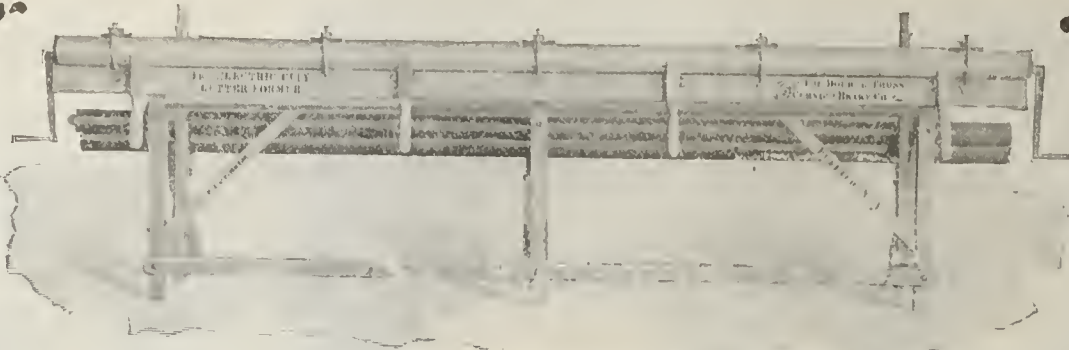
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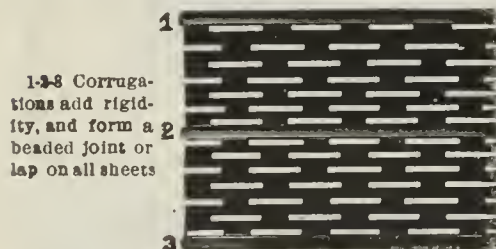
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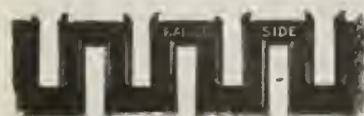
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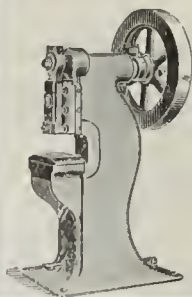
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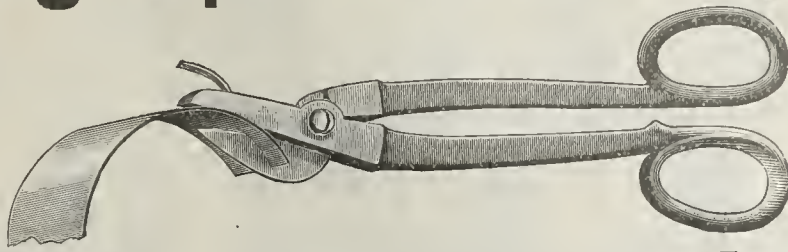
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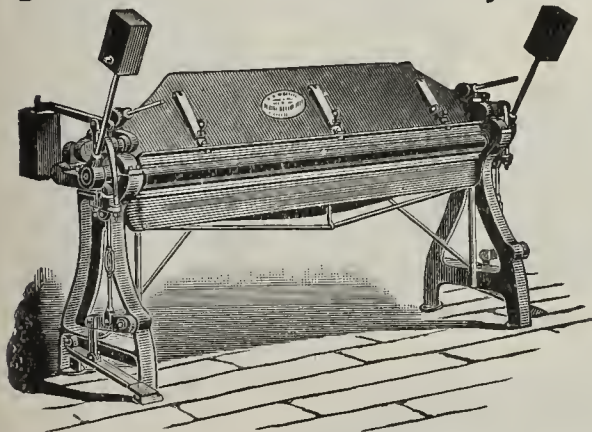
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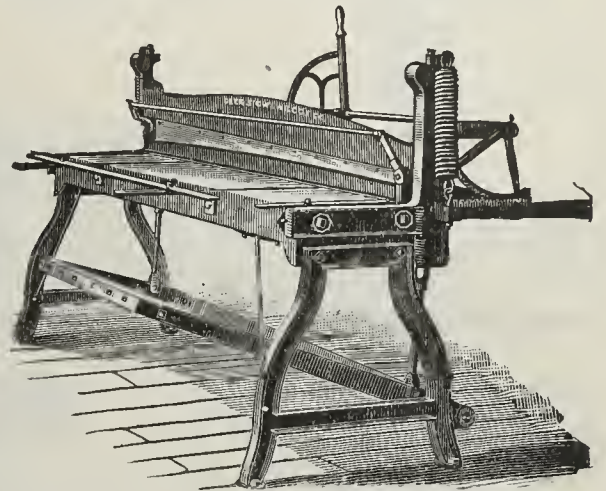


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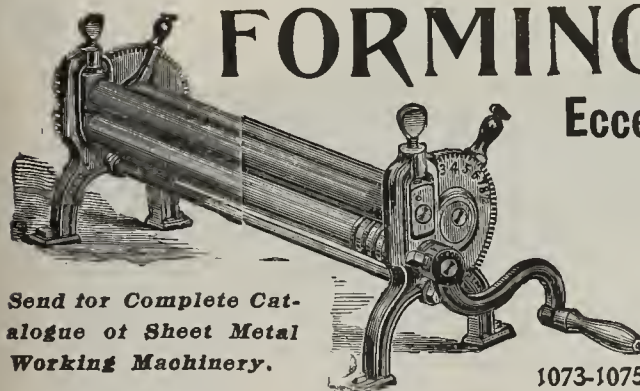
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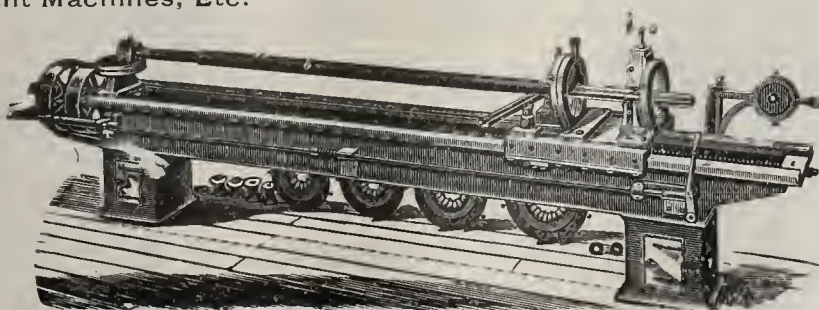
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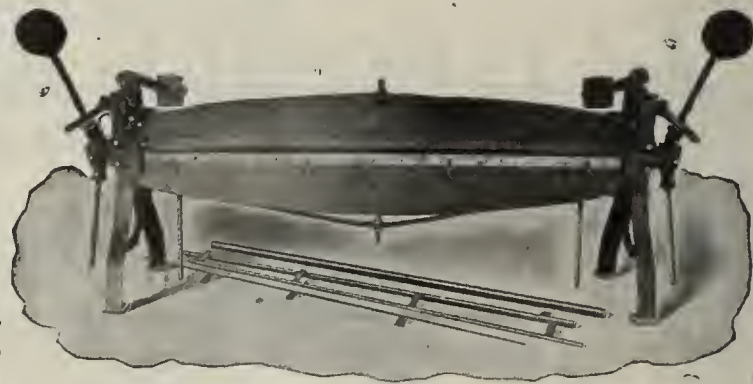
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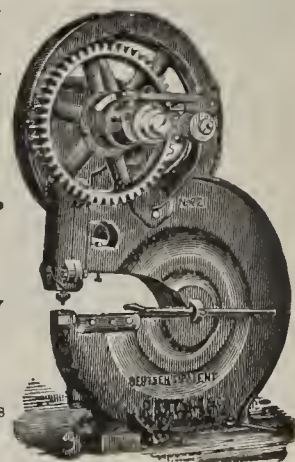
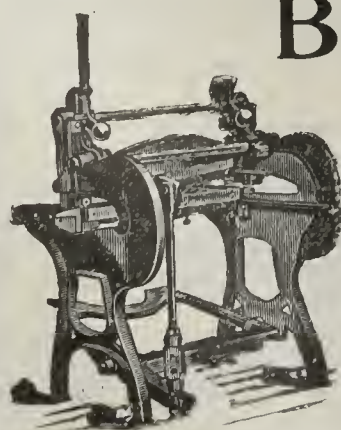
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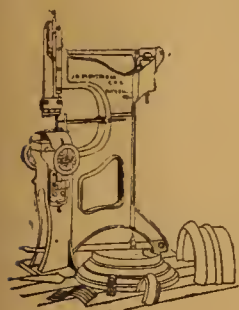
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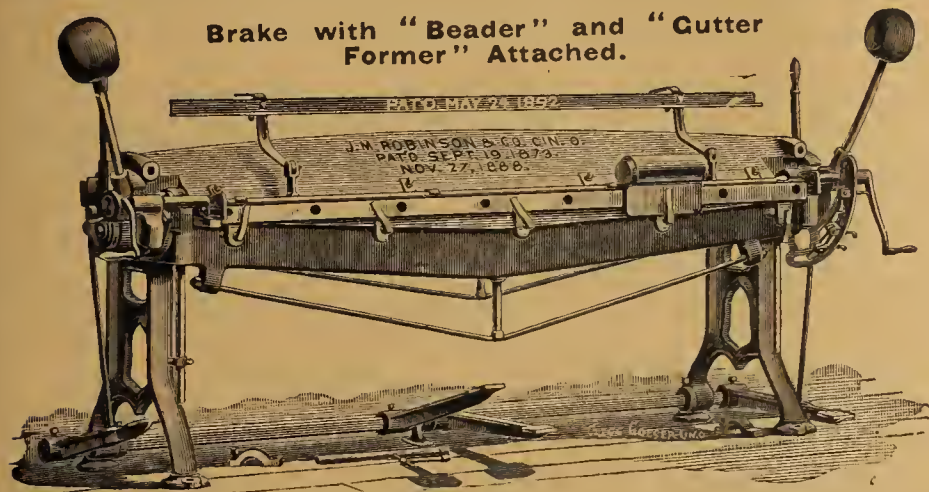
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Brake with "Beader" and "Gutter Former" Attached.



With which to form Sheet Metal into Cornice Moldings, Ridge Caps, Skylight Bars; and with Beader and Gutter Former attached to Brake (price of which is extra) Bead and Form Gutters. Cornice manufacturers' Steel Straight Edges, 30-inch to 10-foot lengths.

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Machinery for
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a specialty.

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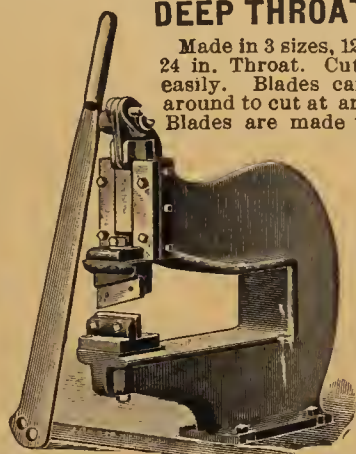
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"Just to please Miss Dolly."

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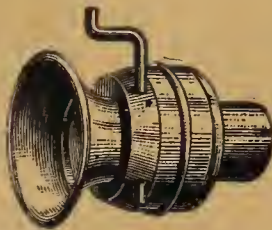
Flanagan: "It's a falla-acy, me bhoy. The time only seems longer to thim thot's married."—*Collier's Weekly.*



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Page 6.

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They
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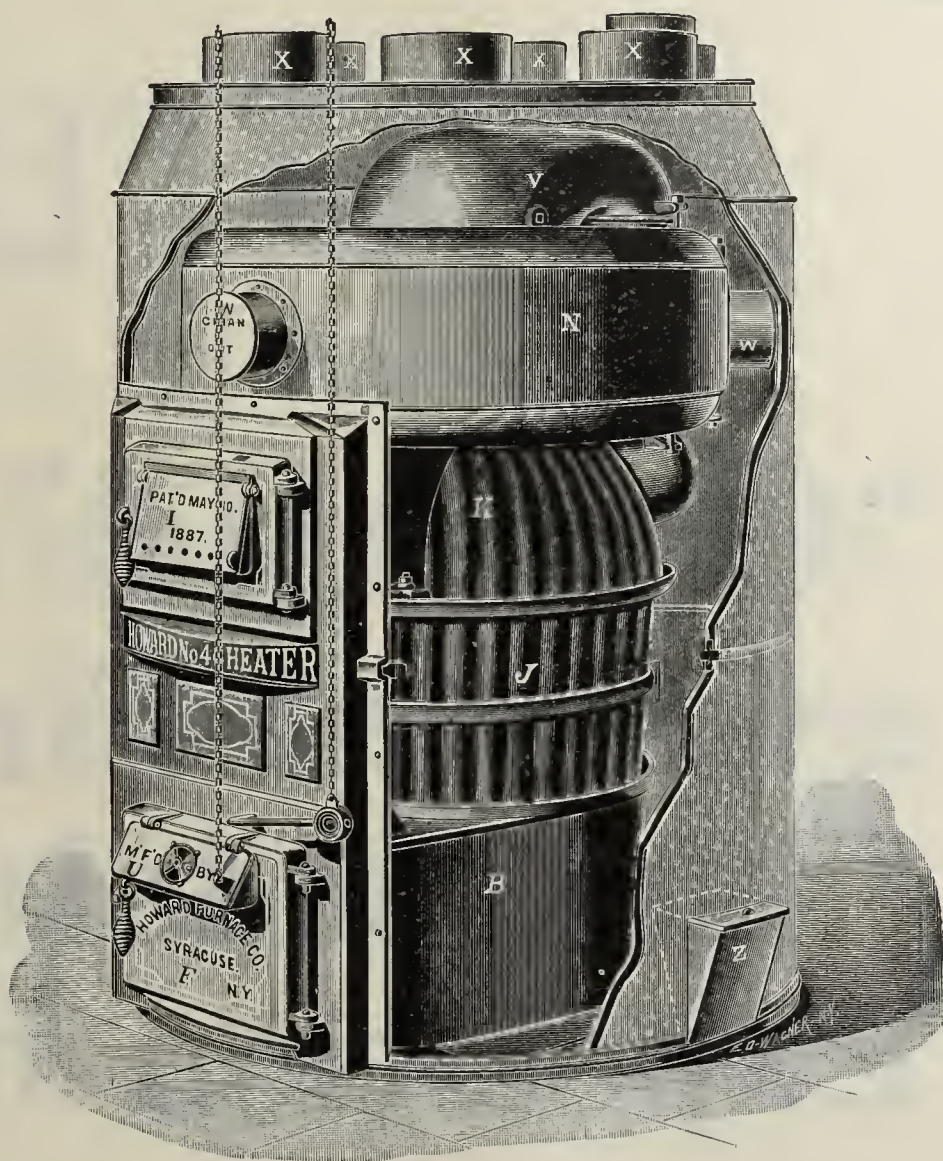
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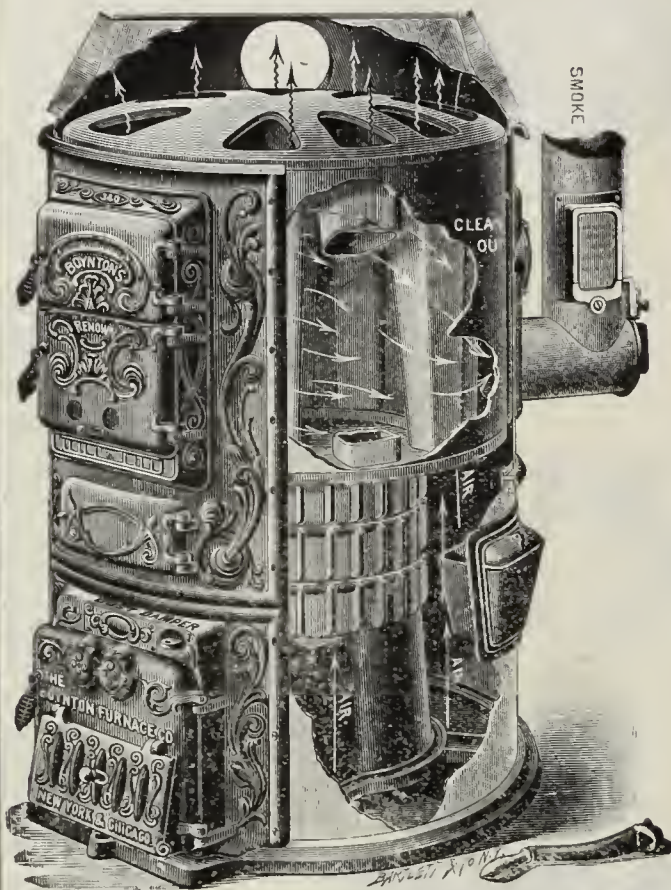
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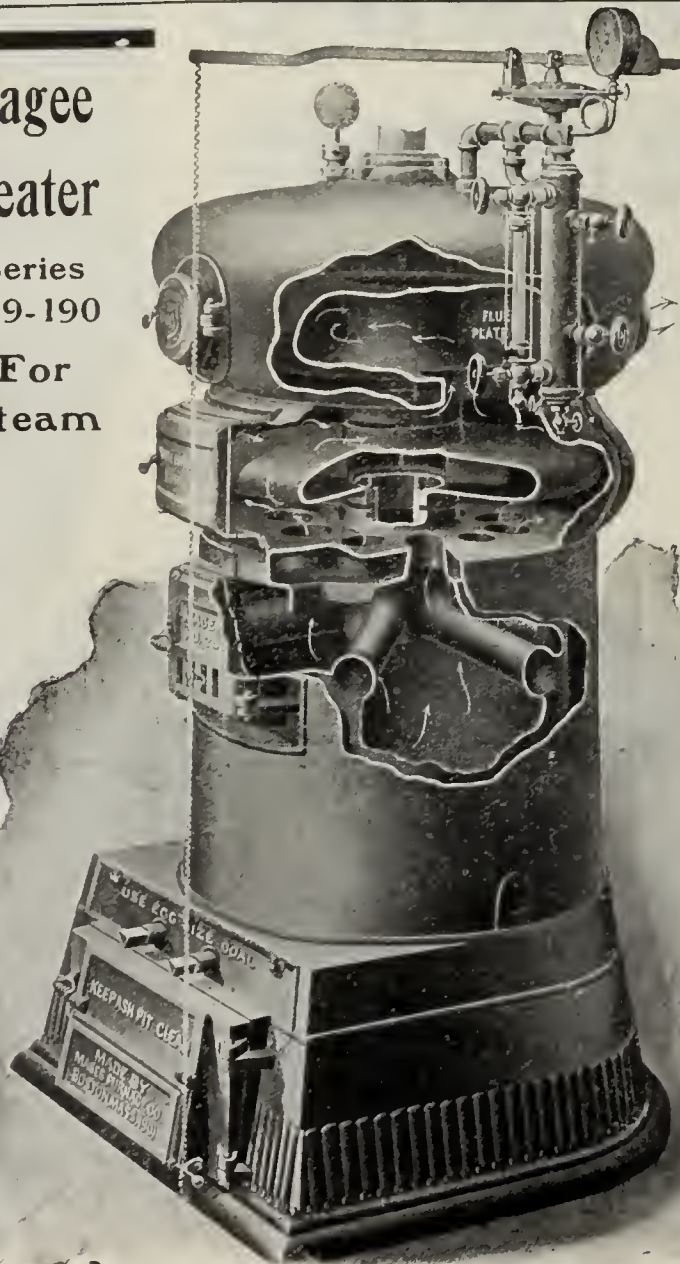
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MANIFEST ADVANTAGES.

Fire pot and water tubes. Large, direct fire surface. Vertical circulation. Large flue areas assure a combining of the gases and full value of travel under slow combustion.

Note travel of dome (7 feet). Simplicity of construction, ease of installation, and many more advantages.

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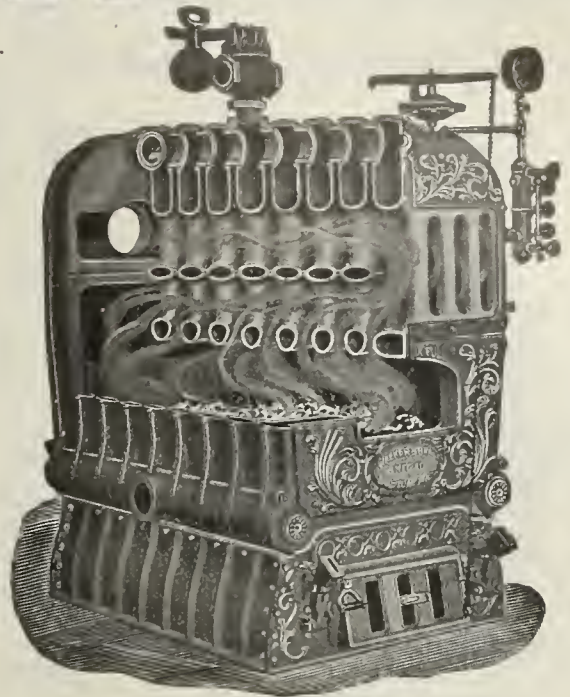
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OUR HEATERS are only 4 ft. 3 in. high, giving excellent elevation for Hot Air Pipes.

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MYSTIC SUNSHINE.

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Don't mistake the name "Sunshine," the trade name that guarantees perfection in stoves, the name one always thinks of first in connection with stoves. We mean to keep record of the orders that this ad. brings and will send a valuable perpetual calendar to dealers who will simply write the words "Chalk Talk" on orders sent to us before December 21st.



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Ideal Boilers.



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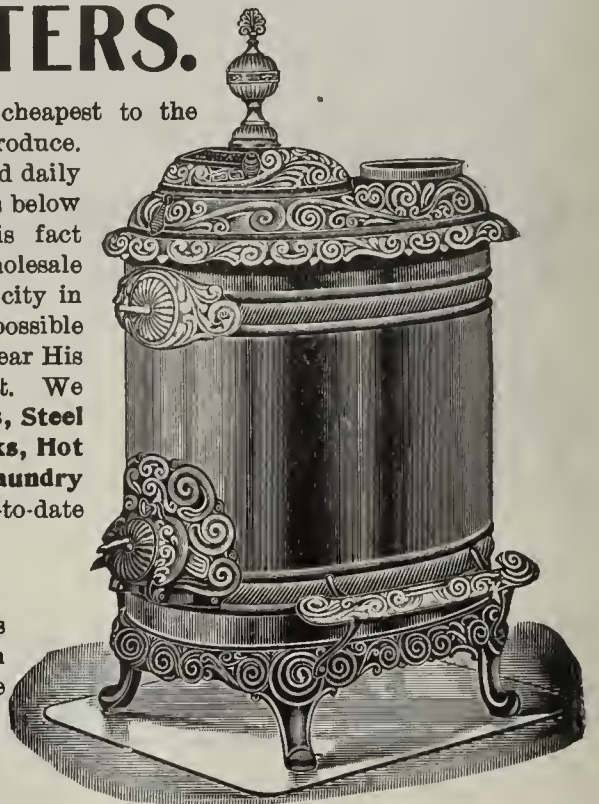
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Write us for particulars and we will put you in the way of making some money.



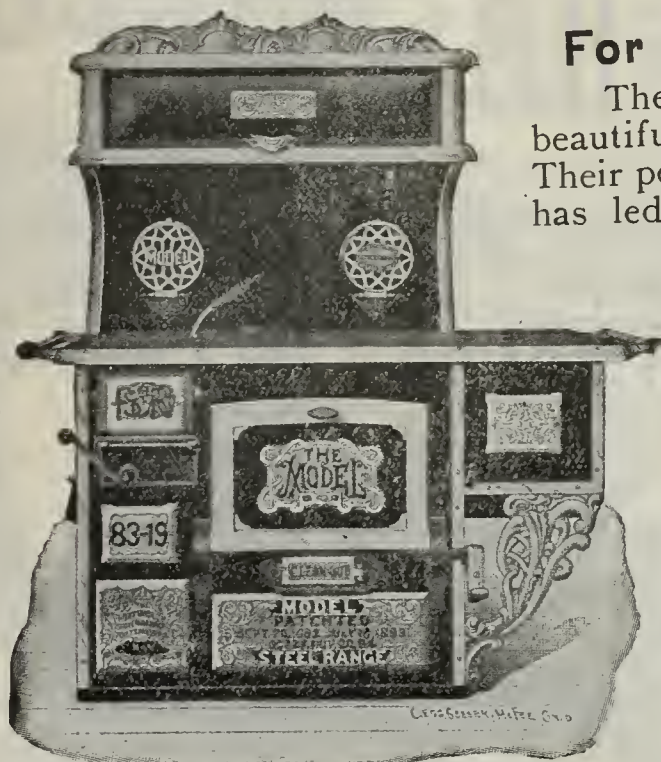
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**STOVES, RANGES and
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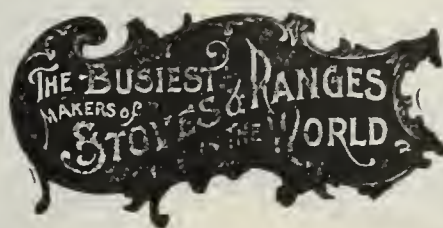
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FOR NATURAL OR ARTIFICIAL GAS.

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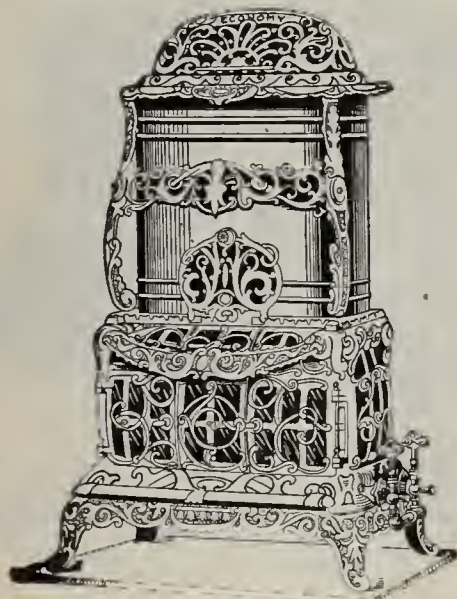
Absolutely free from odor or condensation.

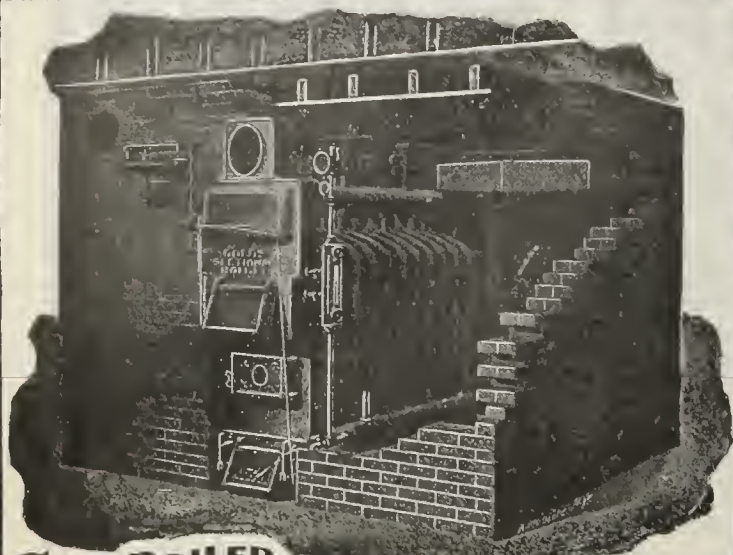
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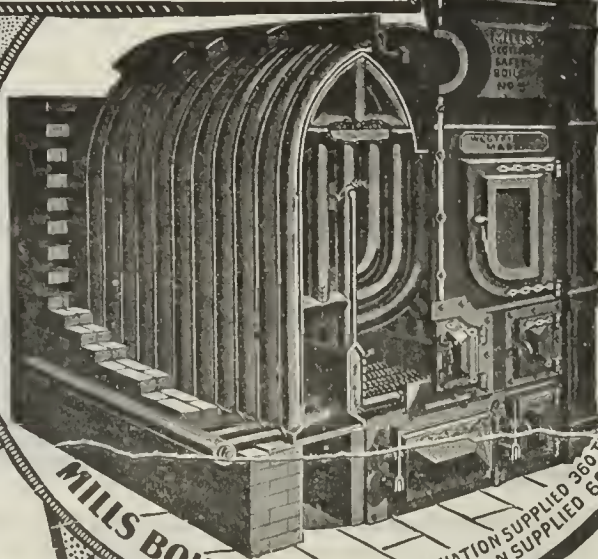
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**EUROPEAN
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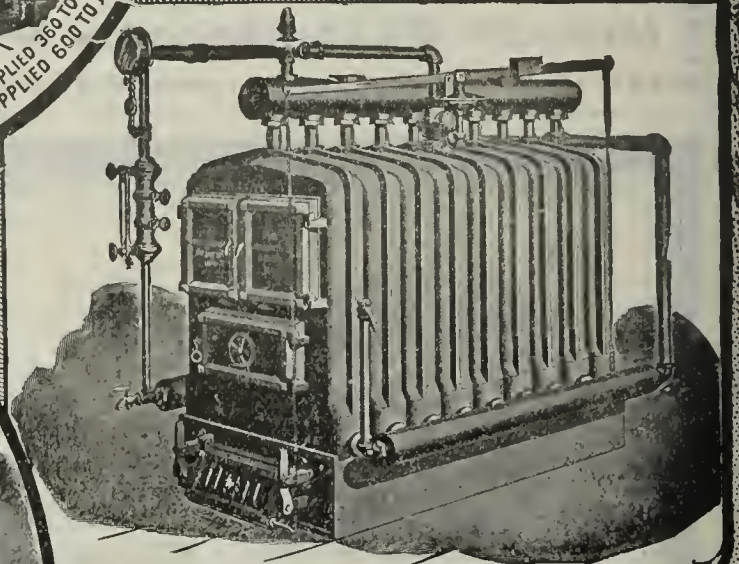
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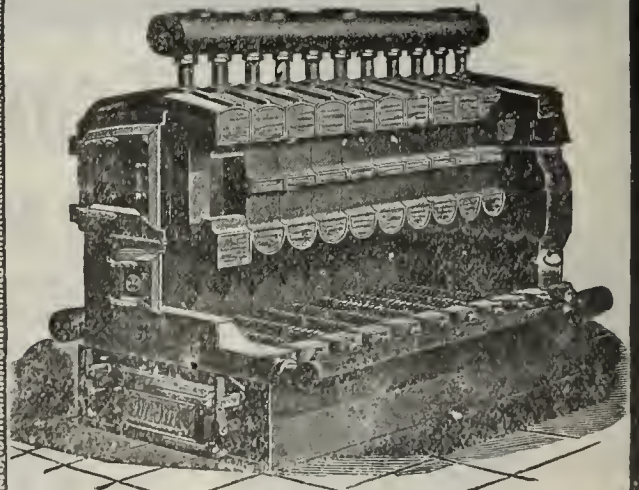
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SALESROOMS:

**133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.**



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.



400 Series Hot Water Heater.

THE NAME

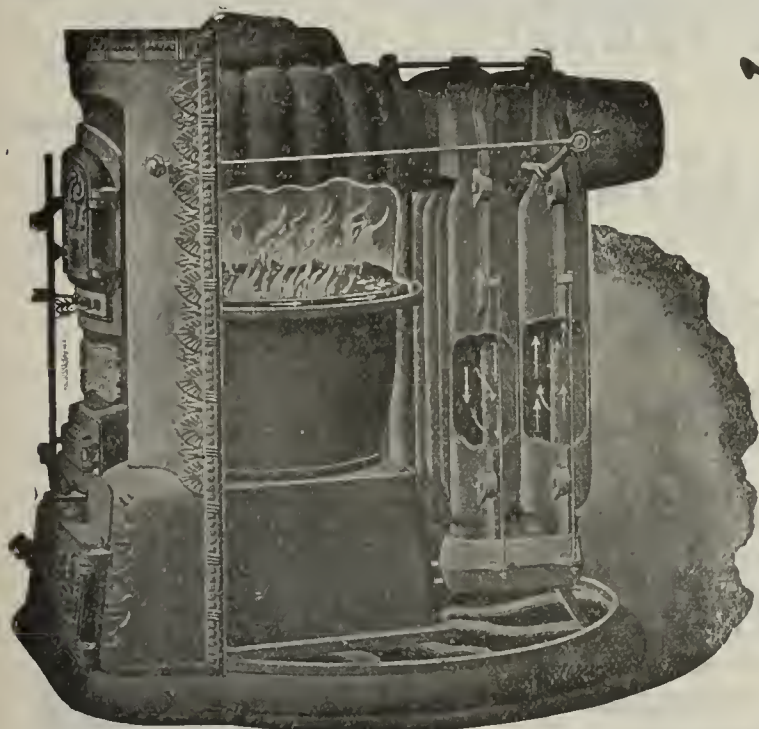
GURNEY

on heating apparatus denotes THE BEST. Secure absolute satisfaction by specifying and using them in your heating work. Capacities for all requirements.

Send for latest trade catalogue.

GURNEY HEATER MFG. CO.,**74 Franklin Street, BOSTON, MASS.****111 Fifth Ave., NEW YORK CITY.**

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.



Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover and Elm Sts., BOSTON, MASS.

Some Furnaces

are like some people—they have insatiable appetites, but give nothing in return for what they consume.

THE BENGAL FURNACE

burns less coal and gives more heat than any other furnace made.

Remember *Quality Lives Long After Price is Forgotten.*

MAKE NO MISTAKE.

Secure the agency for the BENGAL before it is too late.

— MADE BY —

FLOYD, WELLS & CO.,
ROYERSFORD, - - PA.

1000 REGULATORS SOLD IN EIGHT WEEKS.

THE WIRETON TIME REGULATOR.



A Marvelous Seller.
Will automatically turn on the draft of any furnace, steam, or hot water boiler.

We want your business and are bound to have it if price, prompt delivery, and courteous treatment is any inducement to you.

The **THREE** requirements for a first-class furnace are **ALL** incorporated in the

New Quaker Furnace.

Viz.:

ECONOMY in FUEL.

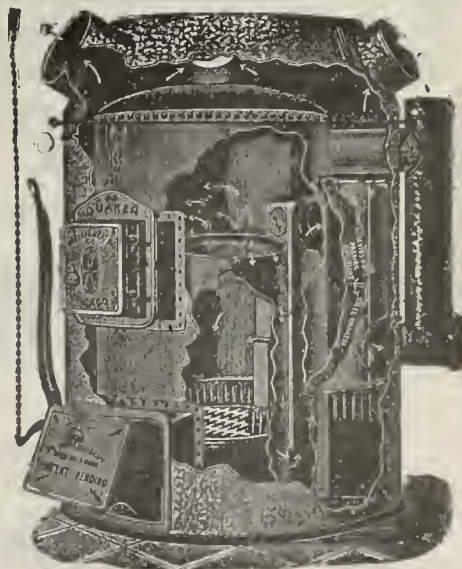
ECONOMY in TIME spent in caring for the fire, and **ECONOMY in REPAIRS.**

DROP US A POSTAL AND WE WILL TELL YOU ALL ABOUT IT.

Our furnaces and specialties are great levers for pushing business your way. Exclusive agencies given.

WIRETON HEATING CO.,

Main Office and Works, Blue Island, Ill. Chicago Office, 40 Dearborn St.



Our Fall Styles Are Now Ready.



FAULTLESS FURNACES.

Extra Heavy Style—Highest Grade Made.

HERO FURNACES.

ALL-CAST or with STEEL RADIATOR.
Heavy, Durable, Powerful Styles.

COMFORT FURNACES.

Popular Style—Popular Prices.

RIVAL FURNACES.

Unique Style—Moderate Prices.

FULL PARTICULARS ON APPLICATION.

The Graff Furnace Co.,
208 WATER ST., NEW YORK.

WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

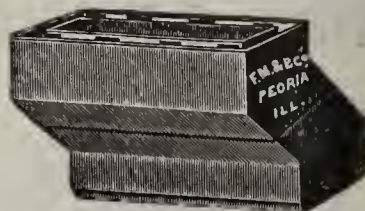
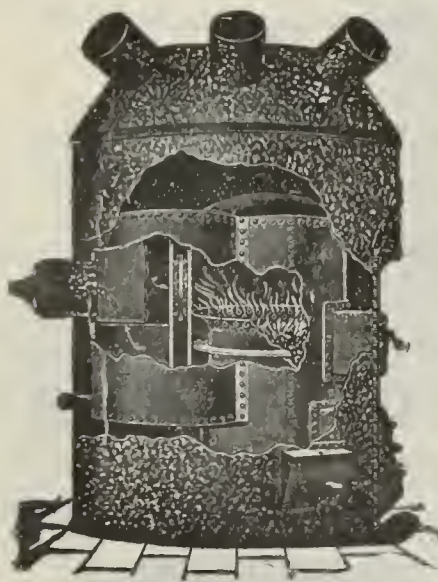
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST. N.Y.
COLUMBUS, O.

BRANCHES 79 LAKE ST. CHICAGO,
ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces,
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bengtson Bros & Co
NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.

CADIZ, OHIO, June 18th, 1900.

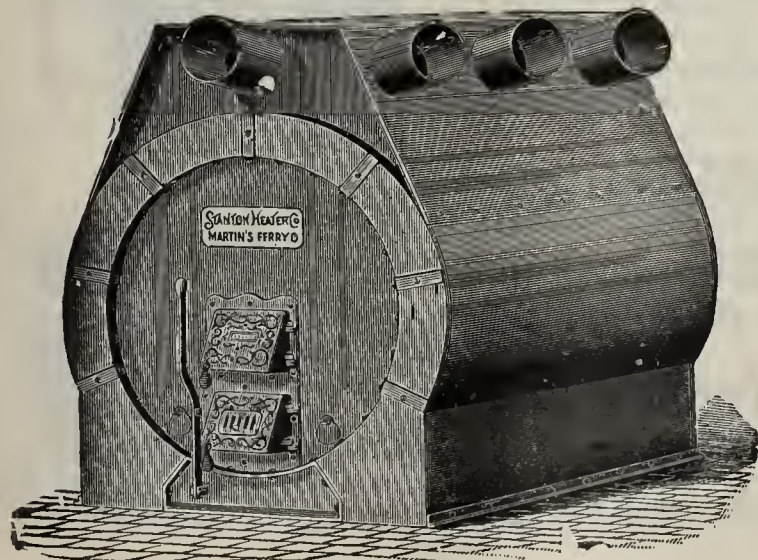
GENTLEMEN :--We had a Stanton Furnace No. 84 put in last Fall and have nothing but praise to say of it. The space heated is 50,400 cubic feet, which it keeps comfortable in the coldest weather. Our fuel costs only one-fourth what it used to and besides is perfectly clean. We take pleasure in recommending it. Respectfully,

J. EHRHART, Hotel Ehrhart.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week



NOBODY except the DIGHTON FURNACE CO. does now or ever did make a range that ALL of FIVE SIDES of the oven are heated flue surfaces. Since we originated the "HOME WINTHROP" construction, others have put double plates, asbestos paper, and various other contrivances to endeavor to protect ALL of the FIVE SIDES and economize in fuel consumption, but in not one single instance have any of these changes approached the results secured with the "HOME WINTHROP."

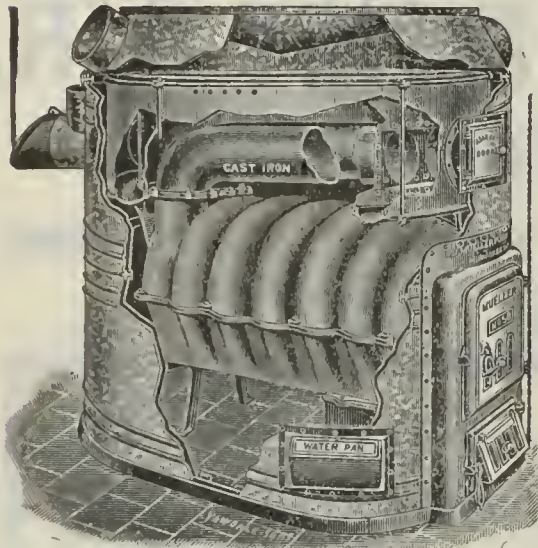
We not only get a larger working capacity in a smaller body than any old type of construction, we arrange every atom of surface to do its full proportion of business, and at the same time, assist and protect its connecting parts—no waste surface, no unnecessary parts.

	No. 7 x 18 or 8 x 18.	No. 8 x 20 or 9 x 20.
Fire Box Measures.....	15 1/8 x 7 3/8 x 7 Inches.	17 1/8 x 7 3/8 x 7 1/2 Inches.
Ash Pit "	16 x 15 1/2 x 4 "	17 3/8 x 18 x 4 1/2 "
Water Front "	17 x 7 "	19 x 7 3/8 "
Perfectly Square Oven.....	18 x 18 x 11 1/2 "	20 x 20 x 12 1/2 "

and when you read these measurements, just remember they are ALL in the body of a range that sells from \$5.00 to \$8.00 less than any other range having anywhere near the same vital measurements.

DIGHTON FURNACE CO., - TAUNTON, MASS.

YOU CANNOT BUY A FURNACE SUPERIOR TO THE



DOUBLE RETURN FLUE STEEL PLATE RADIATOR. FOR LONG WOOD.

MUELLER

BECAUSE IT IS NOT MADE.

Our Heaters are made in all sizes and for all kinds of fuel,

EVERYTHING IN THE HEATING LINE.

Write for Catalogue and Prices.

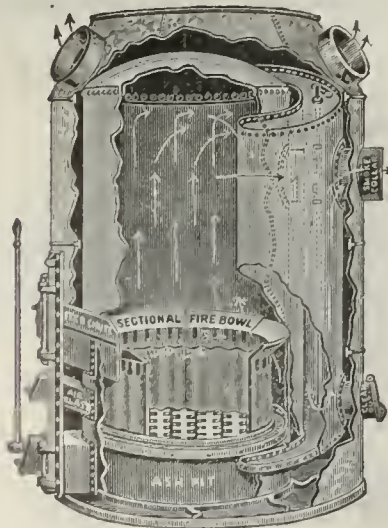
ESTABLISHED 1857.



DOUBLE RADIATOR. ALL CAST IRON.

L. J. MUELLER FURNACE CO.,

190 Reed Street, - - - - - Milwaukee, Wis.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

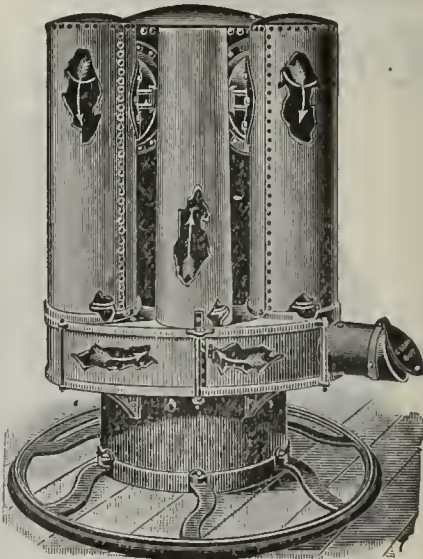
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

They regulate
heat in residences,
offices, stores,
mfg. plants.
Guaranteed.

...Wanted...

Mechanics familiar with the installation of house heating furnaces
or boilers to sell and put up

No electricity
or compressed air.
Simple as
a heavy spring
motor can be.

SPRAGUE *AUTOMATIC* DAMPER and VALVE REGULATORS

Must be of good address and have ability as salesmen. Salary
\$15 per week and expenses. References required.

WRITE THE MANUFRS.,

HOWARD THERMOSTAT CO., Oswego, N.Y.

WEST WATER STREET

They Are
"Coal Savers."

Money Makers.
for Dealers.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.



HEATER.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY


WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

GILT EDGE FURNACES AND COMBINATION HEATERS.

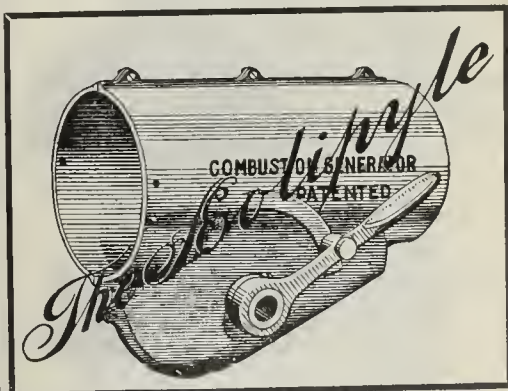
Registers, and Tin and Galvanized Iron Furnace Fittings.

MANUFACTURED BY

R. J. SCHWAB & SONS CO., = Milwaukee, Wis.



EVERYBODY OUGHT TO KNOW ABOUT THE
RICHMOND
HEATERS.
THEY HEAT YOUR HOUSE WITH LESS COAL AND
LESS TROUBLE THAN ANY OTHER HEATER.
Write for Catalogue.
The Richmond Stove Co., Norwich, Conn.



Saves Coal, Increases Heat,
Keeps Temperature Even,
Prevents Escape of Coal Gas,
Reduces Labor,
Avoids Sifting Ashes,

When Applied for Domestic Use
to Smoke Pipe of

House Furnace,
Hot Water Heater,
Low Pressure Boiler,
Stove or Range.

Aeolipyle Company,

237 Water St., New York,
Tel. 1849, John. U. S. A.

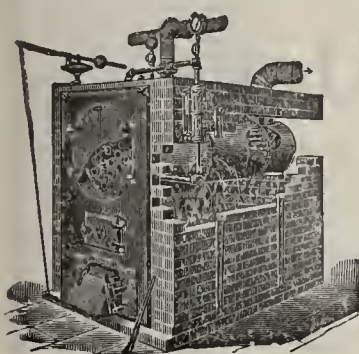
Vance Boilers.

The most economical Steam and Hot
Water Boiler on the market. Write
for Catalogue and Price List.

VANCE BOILER WORKS,

373 Atkinson St.,

Geneva, N. Y.



**HOT WATER
AND
HOT AIR**



HEATING BY COMBINATION STOVES
AND FURNACES.

Suitable for Large or Small
Houses, Stores, Conserva-
tories, Barber Shops, Ho-
tels, etc., etc.

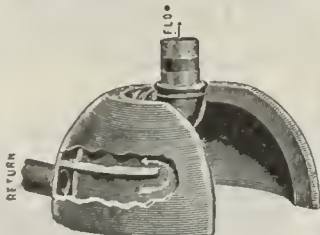
Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

**THE NATIONAL
PIPE BENDING CO**
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

They Fit Any
Furnace.

Base section when
used without ring
sections.



Ring Section.

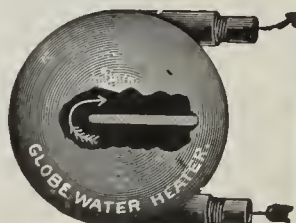


These Boilers are made in three sizes
diameter, and from 100 to 600 square feet
radiation capacity.

Will heat those cold rooms, or an ad-
dition to the building. Will increase the
capacity of any furnace. Are cheaper
than coils and will do more work.

GLOBE WATER HEATER

Attached to any
Furnace will
heat water for
domestic use.

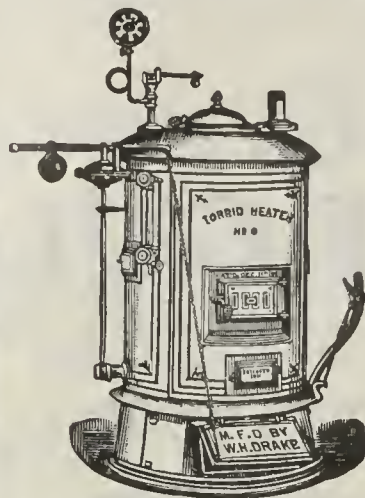


Write for new circular. Manufactured by

FRANK D. STOLZ,

115 Lake St. - - Chicago, Ill.

"TORRID HEATER." *It is Practical in Design.*
FOR STEAM OR HOT WATER. *It is Safe, Being Tested to 200 Pounds.*
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
*It has the Torrid Patent Rocking and
Dumping Grate.*
It is Low in Price.



SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St.,
NEWARK, N. J.

Factory: Hackettstown, N. J.

**MONARCH
FURNACES.**



All Cast Iron. For
Hard and Soft Coal.
At Foundry Prices
to Large Buyers.

Inquiries Solicited.

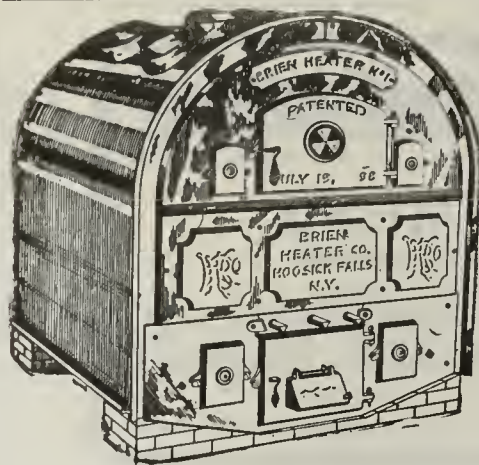
OUR NEW CATALOGUE JUST OUT.

**The Forest City
Foundry and Mfg. Co.**
81 Elm Street,
CLEVELAND, OHIO.
Gray Iron Castings to order. High
grade only.

Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.



BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

SPECIFY

Pierce Boilers.

For Steam and Water House Heating they are unequalled.
Endorsed by the foremost Heating Engineers.

WRITE FOR NEW CATALOGUE.

PIERCE, BUTLER & PIERCE MFG. CO.,
SYRACUSE, N. Y.

NEW YORK.

BOSTON.

PHILADELPHIA.



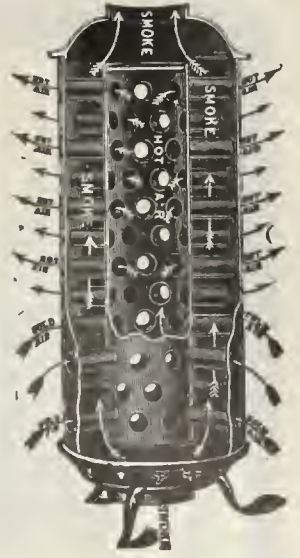
A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

A fire in a red glow represents 1200 degrees of heat, a draft through this carries the heat out of the chimney unless intercepted by a cross tube **Rochester Radiator**, when nearly all this waste heat is conveyed into the room by the rapid circulation of air through the tubes and saved. This appeals to common sense and is verified by the most thorough scientific test.

The **Rochester Radiator** is a satisfactory article to sell and one that affords the dealer a good profit.

ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.



4,866 sq. ins.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

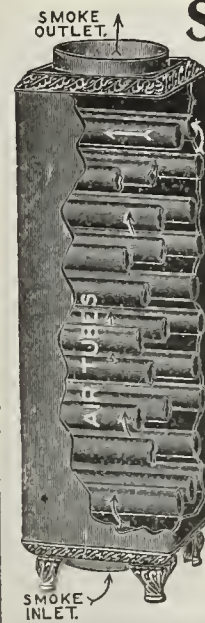
WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

Independent

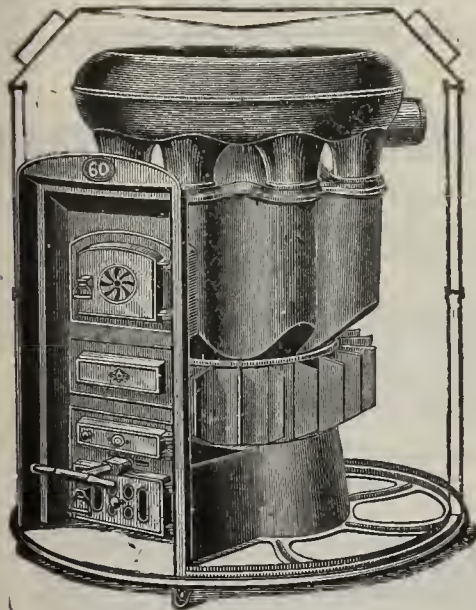


Square Stove Pipe Radiators

Not only do they give the maximum amount of heat but they are an ornament to any room. This is the kind your customers will buy.

Independent Register Co.,

152 Champlain St., CLEVELAND, OHIO.



Imitation is Flattery.

Cory's All Cast FURNACES

HAVE BEEN COPIED BUT NEVER EXCELLED.

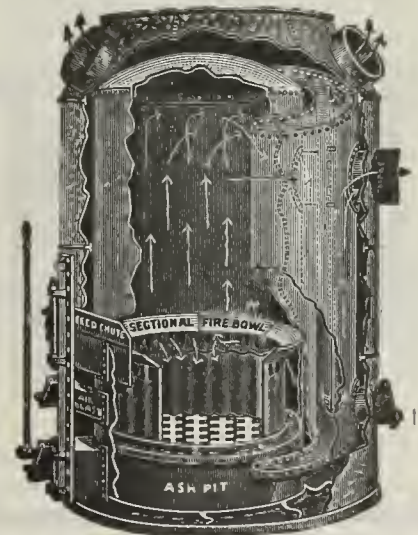
An Absolutely Gas Tight Furnace Without Bolted Joints.

UZAL CORY & CO.,

210 WATER ST., NEW YORK.

Established 1847.

The Lennox



Steel Furnace.

MADE BY
THE LENNOX MACHINE COMPANY,
East Frederick St., Marshalltown, Iowa.
CATALOG FREE.



CABINET PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enamelling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

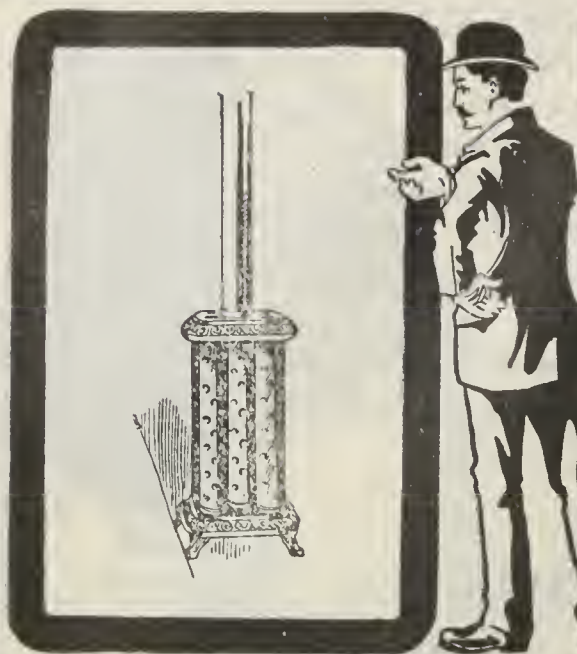
SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

THE GEORGE W. COPE Stove Pattern Works.

ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts., DETROIT, : : MICH.



NEW ERA RADIATOR

HOT FACTS—OF WHICH THIS IS No. 1.

Nature has certain laws. One is that heat rises—another that rapid circulation must be had to heat a room evenly and healthfully.

There are radiators on the market that try to change these laws. But they can't do it. The New Era Radiator conforms to them and extracts the largest amount of heat from a given quantity of fuel. Its principles are right, its construction is scientific and accurate, and it sells at a price that is inducing to every economical housekeeper.

There is money waiting for every dealer who sells the New Era, and we can prove it.

WILMOT CASTLE & CO., ROCHESTER, N.Y.

Registers and Ventilators



Send
for
Prices.



Seavey Mfg. Co., : : BOSTON, MASS.

STOVE BANDS

—AND—

RINGS.

SPECIAL TUBING

Cut to Length and Plated.

FLAT STRIPS & CORNERS.

SPECIAL

**PUNCH
PRESSWORK**

SOLICITED.

Quality and Finish the Best.

The Kirk Manufacturing Co.,
TOLEDO, OHIO.



CLAD'S Hot Water Stove.

PRICE-LIST ON APPLICATION.

V. CLAD & SONS,
MANUFACTURERS OF

French Ranges and Broilers,

Twelfth Street below Locust,
PHILADELPHIA.



THE VICTOR INSTANTANEOUS WATER HEATER

Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

Send for Descriptive Circular, Prices,
Discounts, Etc.

W. J. ADAM, - - Joliet, Ills.

Stove Dealers

will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

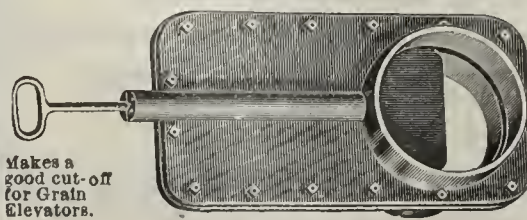
JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.

THE S. & S. PATENT Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. Send for sample and prices.

**City Forge and
Iron Works,**
DAYTON, OHIO.

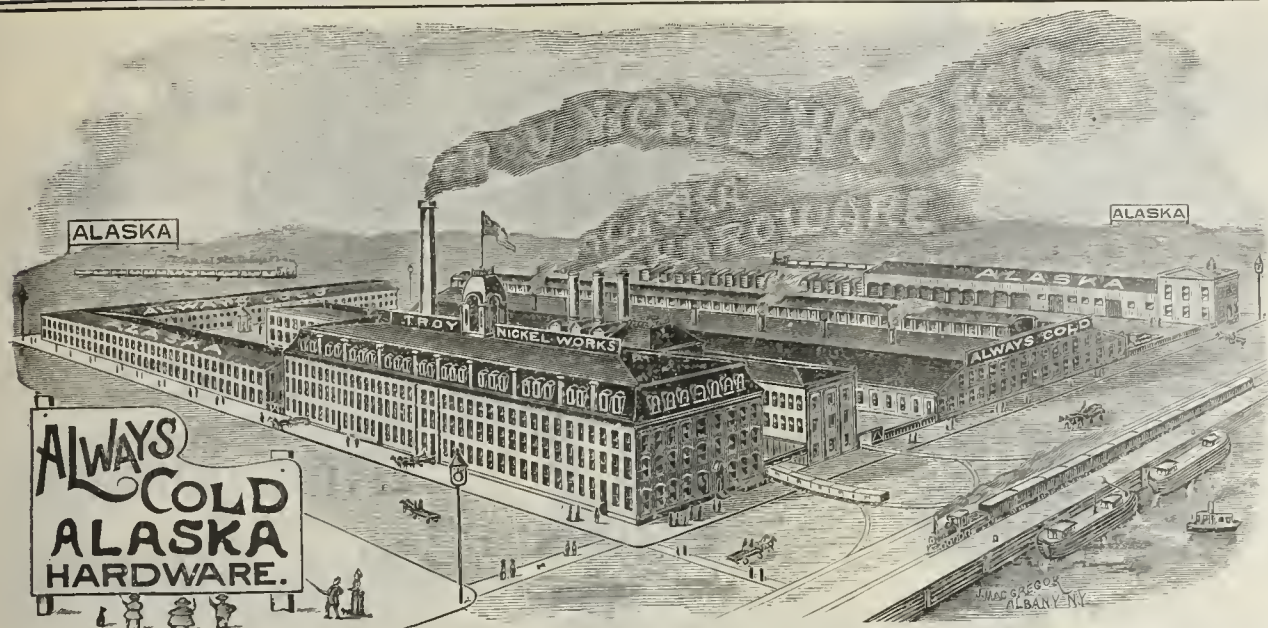


Makes a
good cut-off
for Grain
Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,
NEW HAVEN, CONN.



Western Branch,
Chicago, Ill.

TROY NICKEL WORKS,
ALBANY, N. Y.

Cable Address, (Nickel.)

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY,
Forth Amboy, N. J.

FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:

South Fourth Street, Brooklyn, L. I.

362 Grove Street, Jersey City, N. J.

CATALOGUES NOW READY.

STOVE REPAIRS WATER FRONTS

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.

Repairs for 20,000 different stoves and furnaces.

WRITE FOR CATALOGUE.

H. E. HESSLER CO., Syracuse, N. Y.

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE. N. J.

SAMPLES SENT FREE to Stove Dealers.



This New Patent Prepared Dry Stove Polish—it Mixes Quicker—Shines Quick and Easy—Black and Brilliant Waterproof and Rustproof—Keeps any length of time—Never Spoils—Cheapest Polish in the market—1 Box will do as much work as 15 lbs. of Paste—Size of Box, 10½ L x 8¼ Deep, 6 in. wide.

AYLING BROTHERS,

8-14 Haddon Ave.,

Chicago, Ill.

ADDRESS DEPARTMENT A.

HANDLE THE BEST:

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



Dealers are invited to send for circulars.

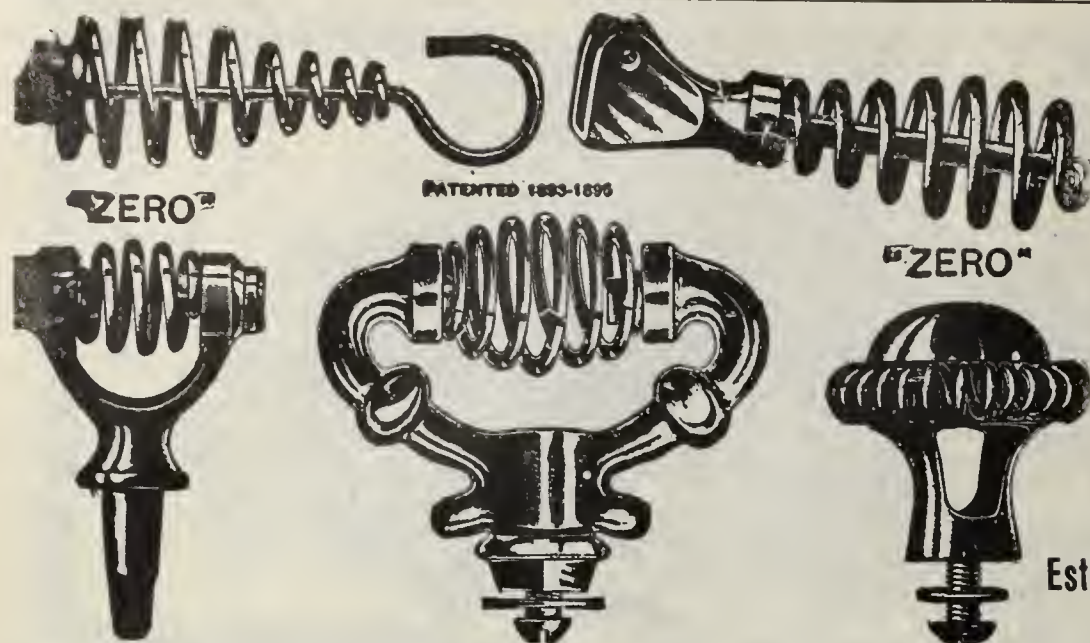
Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.

Bridgeport, Conn.



"ZERO"
PATENTED 1893-1896
"ZERO"

THE BEST
HOT AIR
DAMPER
ATTACHMENT MARK.

"ZERO"
WIRE GOODS.
MANUFACTURED BY
Est. of **W. F. GREENE,**
TROY, N. Y.

No One Disputes



that **RUTLAND LINING** is the
Standard of plastics.

Standard goods give the best sat-
isfaction to your customers.

The price is right.

60 Wabash Ave.,
CHICAGO, ILL.
NORTH EAST, MD.

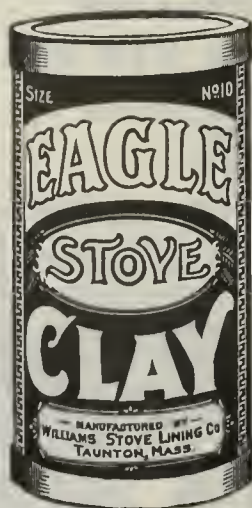
Rutland Fire Clay Co.,
RUTLAND, VT.



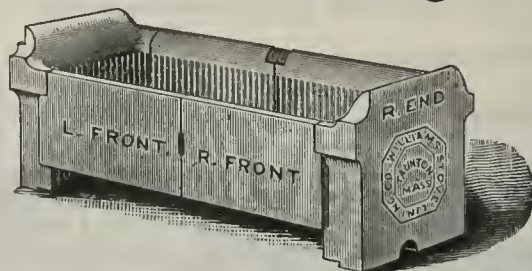
INCANDESCENT Gas Fuel.



Prices and samples
free by mail.



STOVE Brick Linings.



Prompt shipment and
best quality guaranteed.

WILLIAMS STOVE LINING CO., - Taunton, Mass.



"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, **DOUBLE
LOCK SEAM** in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

Largest and
Best Stock.
Special Stock of
WATER FRONTS,
Thoroughly Fitted and
Tested.



The S. M. Howes CO.,
40-42-44-46 Union St.,
BOSTON.
Factory, Charlestown.
Duplicate Postals, Order
Blanks, Stamped Envel-
opes, Catalogues fur-
nished upon application.



For All Stoves and Ranges.

*Mica, Stove Polish, Stove
Bolts, Furnace Cement.*

A. G. BRAUER, 316-318 North 3d St., St. Louis.

FIRE BRICK LININGS

For all Stoves, Ranges and Heaters.

PRESBREY STOVE LINING CO.,
TAUNTON, MASS.

STOVE REPAIRS.

We have the patterns of the Chicago & Erie
Stove Company, and can furnish repairs for said
stoves.

The DEPINET FOUNDRY COMPANY, Erie, Pa.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or
Envelopes sent upon application.

Largest Jobbers in New England.

HENRY N. CLARK CO.,

56 and 58 Union St.,

BOSTON, MASS.

SHINES FOR ALL

It is the polishers' friend, and
will polish anything
Write for free sample
to

197 E. Wash-
ington St.,
Ind'p'l's,
Ind.

GEO. W. HOFFMAN



THE GEM Ball-Bearing Stove Casters

STRONG
AND
DURABLE



THE COMING
STOVE
TRUCKS

Try a Set and you will use no other
BEST PRICES AND DISCOUNTS ON APPLICATION

KRAMER BROS., MANUFACTURERS

Dayton Stove Repair Works

DAYTON, OHIO.

ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers,
expansion tanks and boil-
ers with copper tube coils
inside for heating water
by steam.

L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.



DO you want
Stoves and
Heaters that are
easily sold and

STAY SOLD? We have
been very successful in de-
signing patterns for such.

THE GOBEILLE PATTERN CO.,
CLEVELAND, OHIO.

PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works, - Troy, N. Y.

The Milwaukee Pattern Works.
Ornamental and Stove Patterns.

Sketches and Designs for Stove Work
of all kinds.

Correspondence Solicited.

505-507 Cedar Street,

MILWAUKEE, WIS



The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of $\frac{1}{4}$ inch cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.

It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

Sizes: 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

NEW YORK: A. L. Canfield, 284-286 Pearl St.

CHICAGO: Excelsior Steel Furnace Co.

When in want of

Grates, Linings, Water Fronts

and other repairs for stoves
and ranges

YOU CAN'T DO BETTER
than to send us your orders.

BEAR IN MIND

that we can furnish repairs
for any of Barstow's and
Spicer's Stoves promptly
and at lowest prices.

SEND US A TRIAL OR-
DER, you will not regret it.

A. J. MAGOON & SON,

313 WEYBOSSET ST.,

Providence, R. I.

SELECTED MICA ONLY.

Prepared expressly for the Stove and
Hardware Trade.

Two Grades: "North Carolina"
and "Nevada."

PRICE LISTS AND DISCOUNTS SENT ON
APPLICATION.

THE PALERMO MICA CO.,

115 Beekman St., New York.

MICA

Specially Prepared for the
Stove Trade.

OHIO MICA CO., CANTON, OHIO.

—HIS EXPERIENCE.—Briggs: "You
don't know what you are talking about
when you call me a donkey?"

Diggs: "I'd like to know why I don't.
I once owned a donkey for three
months."—Chicago News.

—MISPLACED LINES.—Nell: "Mad at
him? Why, he wrote a lovely poem to
her."

Bell: "Yes, but she never read it.
When she saw the title of it she tore
the whole thing up in a fit of anger.
You see, he called it 'Lines on Mabel's
Face.'"—Philadelphia Catholic Standard
and Times.

ARCTIC STOVE TRIMMINGS.



FANNER MFG. CO., - CLEVELAND, O.

MICA

ASSORTED PACKAGES.

Put up expressly
for the Retail Trade.

ONE POUND—4 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$2.00	$4\frac{1}{2} \times 6$	$2\frac{3}{4} \times 8$
Wyoming	-	1.70	$2\frac{3}{4} \times 3\frac{1}{2}$	$2\frac{1}{4} \times 4\frac{1}{2}$

TWO POUND—8 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$3.75	2×3	$2\frac{3}{4} \times 4$
			2×4	$2\frac{3}{4} \times 3\frac{1}{2}$
Wyoming	-	3.20	3×8	$2\frac{1}{2} \times 4\frac{1}{2}$
			$3 \times 4\frac{1}{2}$	$4\frac{1}{2} \times 6\frac{1}{2}$

THREE POUND—12 SIZES. $\frac{1}{4}$ lb. each size.

North Carolina	-	\$5.20	$4\frac{1}{2} \times 5$	$2\frac{3}{4} \times 4$
			$2\frac{3}{4} \times 4\frac{1}{2}$	$2\frac{3}{4} \times 3\frac{1}{2}$
			3×8	2×4
Wyoming	-	4.25	$2\frac{1}{4} \times 4\frac{1}{2}$	$2\frac{3}{4} \times 2\frac{3}{4}$
			$2\frac{1}{2} \times 3$	$2\frac{3}{4} \times 3\frac{1}{2}$
			2×3	$5 \times 6\frac{1}{2}$

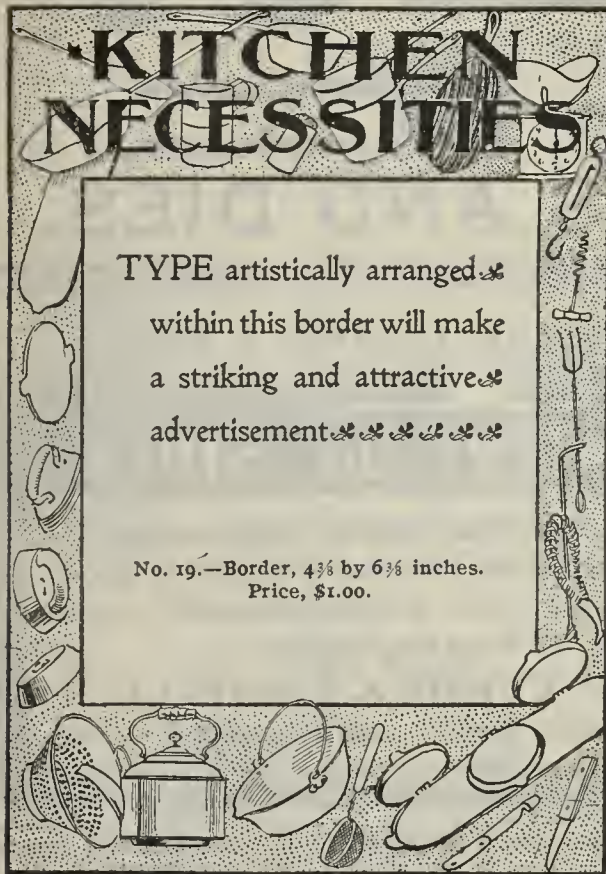
ABOVE PRICES NET. NO DISCOUNT

EUGENE MUNSELL & CO.,

NEW YORK and CHICAGO.

ADVERTISING CUTS

The cuts illustrated on this page will be useful to Furnacemen, Plumbers, Stove Dealers and House Furnishers, for newspaper or circular advertising, letter heads, &c. *The cuts are shown reduced to 3-5 actual size.*



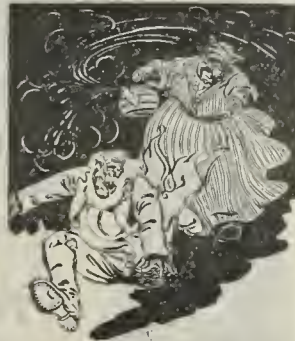
No. 33.—Price, 50 cents.



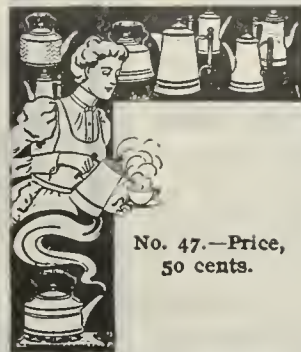
No. 42.—Price, 75 cents.



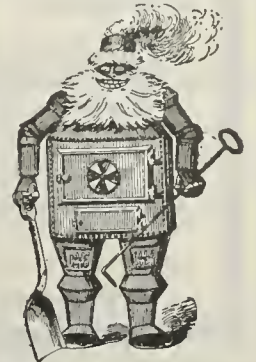
No. 46.—Price, 50 cents.



No. 36.—Price, 50 cents.



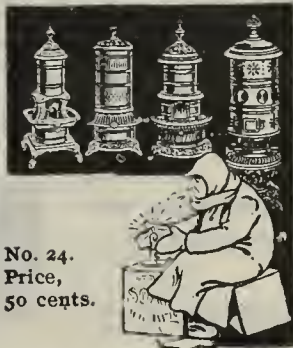
No. 47.—Price, 50 cents.



No. 61.—Price, 50 cents.



No. 15.—Price, 50 cents.



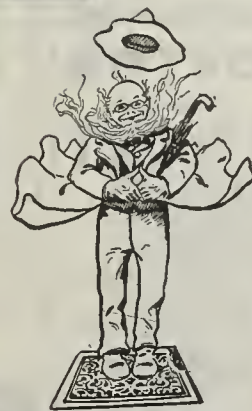
No. 24.—Price, 50 cents.



No. 39.—Price, 50 cents.



No. 41.—Price, 50 cents.



No. 48.—Price, 50 cents.



No. 78.—Price, 25 cents.



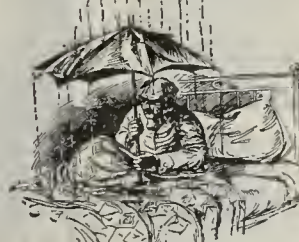
No. 20.—Price, 50 cents.



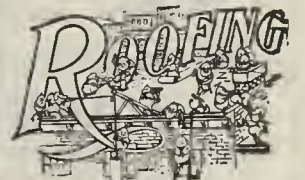
No. 30.—Price, 50 cents.



No. 45.—Price, 50 cents.



No. 84.—Price, 50 cents.



No. 83.—Price, 40 cents.



No. 81.—Price, 40 cents.



No. 29.—Price, 50 cents.



No. 32.—Price, 50 cents.



No. 44.—Price, 40 cents.



No. 75.—Price, 75 cents.

The Advertising Cuts illustrated above are reproduced 3-5 of the actual sizes.

Cuts Nos 81 and 83 are also sold in larger sizes—viz, No. 81, 4 1/4 in. wide and 3 in. deep, price 75 cents, and No. 83, 4 in. wide and 2 1/2 in. deep, price 75 cents. We have numerous other cuts for advertising hardware, kitchen and household articles, cutlery, mechanics' tools, &c. These include cuts of various unique designs, together with a line of 128 cuts each giving a small, accurate illustration of a salable article.

A 16-Page illustrated circular and price-list of advertising cuts will be mailed on application.

Sent prepaid by DAVID WILLIAMS COMPANY, 232-238 William Street, N. Y.

By
Thos. McNeil

**THE
STEAM AND
HOT WATER
FITTERS'
TEXT BOOK.**

**140
Pages.
Cloth.**

TELLS HOW

To Estimate Radiation.
To Plan a Hot Water Job.
Size of Flow and Return Pipes.
One and Two Pipe Steam Work.
Heating with Exhaust Steam.
Blower System of Heating.
Explains Valve Construction.
Explains Steam Traps and Automatic Pump Governors.
Connecting High Pressure Appliances.
Making Wall Miter and Box Coils.
Size of Indirect Stacks.
Making Cost Estimates.
Making Specifications and Contracts.

And Many Other Important Things that Good Workmen Must Know.

ILLUSTRATED.
ONE DOLLAR, POSTPAID.

DAVID WILLIAMS CO., PUBLISHERS
232-233 WILLIAM ST., NEW YORK.



BOSTON ADJUSTABLE BRACKET

For Sinks and Trays.
Can be adjusted both vertically and laterally.
Send for Circular.
JOSEPH H. YOUNG, Boston.

**Leather and Rubber
WASHERS,**

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.,
200 Ruggles St., Boston, Mass.

GOLWELL LEAD CO.,
63 Centre Street, New York.
Manufacturers of
LEAD PIPE, SHEET LEAD, SHOT
And Sellers of
Everything You Want for Plumbing.



**GALVANIZED
STEEL TANK**

All sizes and shapes
J. H. EDWARDS,
59 Park Place, N. Y.



**Hand Elevators and
Dumbwaiters**

made to be sold by the Hardware trade. Can be placed in position by any carpenter, Catalogue free.

ENERGY ELEVATOR CO.,
410 Cherry St., Phila., Pa.

D. SAUNDERS' SONS.

MANUFACTURERS OF PATENT







STOCKS AND DIES.

Threading pipe 1/4 inch to 6 inch; the larger sizes have CUTTING-OFF attachment. These tools are light, strong and of superior design and finish; also PIPE threading MACHINES 1/4 inch to 18 inch. Hand or power. Send for catalogue to

27 AHERTON ST., YONKERS, N. Y.

FORBES PATENT DIE STOCK



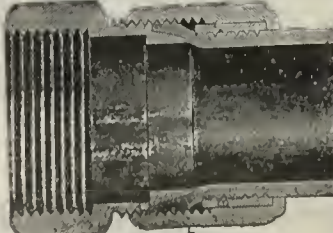

And one man can, with ease,
Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.

Send for Catalogue.

THE CURTIS & CURTIS CO.,
56 Garden Street, BRIDGEPORT, CONN.

SOLDERLESS COUPLINGS

FOR
**LEAD to LEAD and
LEAD to IRON PIPE.**

Catalogue on Application.

THE J. & E. STEVENS CO.,
CROMWELL, CONN.



Thomson Smoke Machine

For Testing Plumbing.


WRITE US FOR BOOKLET AND PRICE.

GUNSTER & FORSYTH,
325-327 Penn Ave., Scranton, Pa.

GEM GASOLINE SOLDERING FURNACES

are ready for use, possessing no offensive odor no smoke, no noise, simple, powerful, durable, convenient and safe. They stand unrivalled, unexcelled and unequalled in their perfection. Try them.

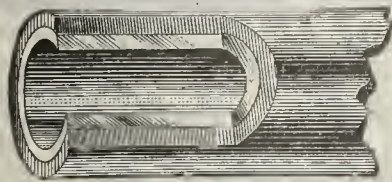
Burgess Soldering Furnace Co.,
COLUMBUS, O.



TIN LINED**IRON PIPE.**

For Pure Water.

Avoiding without extra expense all danger of lead or brass poisoning.

L. & R. PIPE.—Patented.

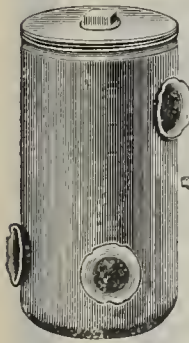
This lining cannot be torn from the pipe even by bending or by hot water.

LEAD LINED**IRON PIPE.**

Made the Same Way.

LAMB & RITCHIE, Cambridge, Mass.**The Anderson Lead Pipe Expanding Pliers.**

PATENTED.



The only tool ever produced that will turn out a collar on lead traps and lead pipes.



In expanding the ends of the lead pipe by the use of these pliers there is no danger of stocking or bending the pipe.

**"PLUMBER'S
BEST FRIEND."**

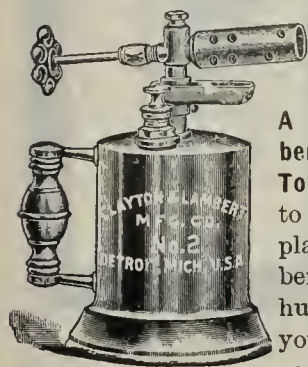
PRICE \$1.25.

Send for Discount.

Sample pair sent by mail to any point in the U. S., postage paid, on receipt of price.

Manufactured by
THE**Anderson Coupling Co.**

PORTLAND, CONN.

On a Bust. The Climax

\$2.50 NET.

A Winter's bust makes the repair man smile. A Clayton & Lambert Fire Pot or Torch makes it easy to care for complaints. Remember everyone is in a hurry, and the more you can quickly care for the less the other man gets. Your money back if you are not pleased with any of our fires. Jobbers sell at factory price, or on receipt of \$3.00 we will ship a No. 2 Torch by paid express.

CLAYTON & LAMBERT MFG. CO.,
Detroit, Mich., U. S. A.**The Climax
RATCHET STOCK**

Is an indispensable tool for conveniently threading iron pipe in ditches, under floors in corners, over head, etc. With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc. It takes standard size dies, which are extra if furnished.

No. 1 threads $\frac{3}{4}$ to 1 in. pipe takes 2 or $2\frac{1}{2}$ in. die, \$10.00.No. 2 threads 1 to 2 in. pipe takes $2\frac{1}{2}$, 3 and 4 in. die, \$17.00

For sale by leading jobbers

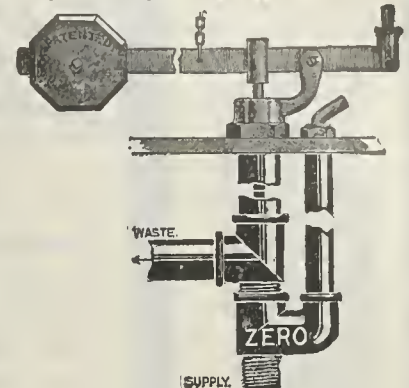
Manufactured Solely by

G. M. Kemp Mfg. Co.,
Baltimore.**FOSTER'S NevRleK****BALL****COCK.**Positive,
Noiseless.
F. W. FOSTER
12 Portland St.,Saves
Water.
MFG. CO.,
Boston.**TRIMO PIPE CUTTER**

Decided improvement. Less friction. Can be changed from a roller to a three-wheel cutter. Extra wheels in the handle. Send for catalog.

TRIMONT MFG. CO., Roxbury, Mass., U.S.A.

—MIKE: "Ut's twins, Pat; wan bhoy an' wan gur-rl."

His Brother: "Begorrah, thin am Oi an uncle or an aunt, Oi dunno?"—*Exchange.***SAVE HALF**

The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.

They are simple and durable in construction—made without screws, springs or pins.

Zero Valve & Brass Mfg. Co.,
296 Seneca St., Buffalo, N. Y.**SISSON
INSERTABLE****JOINT****FOR SOIL PIPE.**

Sizes, 2 to 6 inches.

Light and Heavy.

Saves labor, expense, and makes a neat job.

SEND FOR CIRCULAR.

R. Estabrook's Sons,
1st St., Boston, Mass.**VANDERMAN'S
Adjustable Fitting
FOR
Soil Pipe Connections.****MODEL FITTING
Sent on Application****SEND FOR PRICE.**

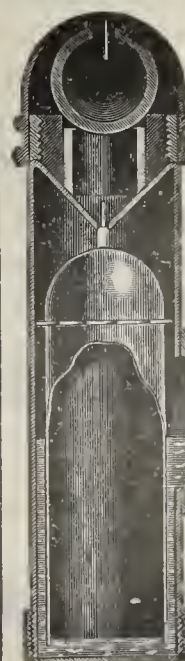
Freight allowed on assorted lots of twelve East of Mississippi River

Send for "A"
Catalogue

Showing large line of

Plumbers' Specialties.**THE VANDERMAN PLUMBING
& HEATING CO.,**

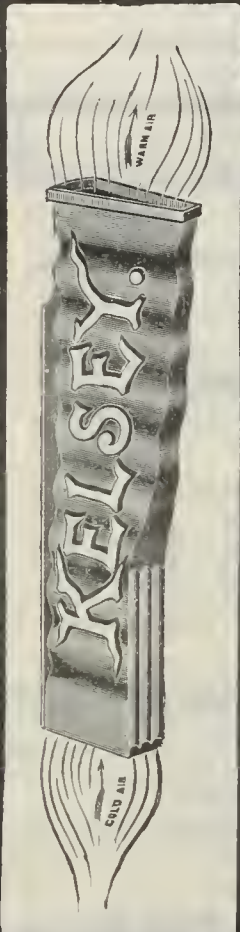
WILLIMANTIC, CONN., U. S. A.

**Morgan's
20th Century
Air and Vacuum
Valve**

Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
40 Dearborn St.,
CHICAGO.

The Kelsey Warm Air Generators



are now being sold and pushed by many leading dealers, to the exclusion of all other heating apparatus, because they afford good, fair profits and give the buyer the best kind of results.

If the agency for your city is not taken, would it not be well to correspond with us at once?

KELSEY Heating is Good Heating.

KELSEY FURNACE CO., Makers.
MAIN OFFICE, | NEW YORK OFFICE,
SYRACUSE, N. Y. | 239 WATER ST.



Royal Enameled Steel Ware

Have you ever handled a more satisfactory line?

Quality better than ever before.

Prompt Shipments. Complete line.

These are the reasons why we hold our trade, and---Continually add new customers to our already large list.

If you are not one of them let us hear from you.

National Enameling and Stamping Co.

BRANCH OFFICES:

New York

Milwaukee

Baltimore

Chicago

St. Louis

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, November 30, 1901.

DAVID WILLIAMS COMPANY, - - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand

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Manufacture of Black Plate to Be Revolutionized.

We are enabled to make the authoritative announcement that the American Tin Plate Company are about to make a radical departure in the manufacture of black plate. They propose, briefly, to revolutionize the method of producing black plate, which will greatly cheapen the cost of the production of tin plate. The process which is to be introduced is one developed by the company and has no reference whatever to any new method which has been brought out by other parties. The construction of a plant on these new lines will be started at once, but its location, for special reasons, is not disclosed. That will, of course, be known in the near future. The new method is not an experiment, as satisfactory tests have shown that the machinery devised will do from two-thirds to three-fourths of the work which is now done by hand, and the output per mill will be increased to three or four times the possible output under the present system.

Automatic machinery has replaced skilled labor in almost every other line of iron and steel production, greatly reducing the number of men employed and the cost of labor per ton of product. In the manufacture of tin plates the introduction of labor saving machinery has been a most difficult problem, as many obstacles had to be overcome, but this has been accomplished by the American Tin Plate Company, and as great progress in manufacture in this line is promised with the construction of the new plant as has been shown by the developments in any other line.

Several years possibly may be required to build and equip a sufficient number of mills on the new plan to care for the full requirements of the trade, but the benefit of cheaper production will be felt from the time the first plant is constructed and in operation. Eventually the large business now going abroad for tin plates to be manufactured into goods for export, and on which a rebate of 99 per cent. of the tariff duty is refunded to the exporter, will be retained in this country. This, of course, leads to the natural expectation that an export trade will be established in due course of time.

A Good Stove Trade.

The season has reached a point when the manufacturers of stoves throughout the country can form a correct estimate as to how their sales for this year will com-

pare with those of previous years. From all sections alike come reports that lead to the conclusion that this has been a good year for the sale of stoves, and that the volume of business has been in excess of that of several immediately preceding years. In the West there is less hesitation on the part of manufacturing houses in stating frankly that their business for the year has already shown an increase. In the East, under the influence of conservatism, the manufacturers are more reluctant to admit that the number of stoves shipped exceeds that of other years, and has probably surpassed their expectations. However, it is not difficult to arrive at this conclusion in view of the information received from various sources. On this satisfactory feature of the trade the manufacturers and the dealers are to be congratulated.

Throughout the year there has been the usual strife between the buyer and seller in regard to prices. There has been some complaint on the part of the manufacturers that the prices which have prevailed have not been altogether satisfactory, and it is the opinion of some that they have not been as profitable as those of last year. The fact that prices have been irregular in some sections has caused the dealers to buy from hand to mouth. It is probable that the stocks in the hands of the dealers, owing to this manner of conducting the business this year, are not large. The natural inference from the conditions referred to is that the stove business generally may be regarded as in a very healthy and satisfactory condition. It is probable that the year's business will close so as to leave all concerned in an advantageous position for taking up the business of next year, when it opens. The winter and early spring months afford ample opportunity for the preparation of new goods and new plans for putting them on the market, and the period when trade is dull is usually characterized by marked activity in planning for the next season. If the dull months, which are near at hand, are utilized by the manufacturers for discussing questions of mutual interest in a broad manner with a view to eliminating the unprofitable and annoying features of the trade, the time will be well spent. The opportunity is certainly worthy of an effort on the part of all who are identified with this branch of the trade.

Business Checked by Shortage of Cars.

Nearly every branch of trade is more or less seriously hampered at the present time by reason of the continued shortage of cars. The situation is particularly embarrassing to the manufacturers of iron and steel. The furnaces are hungry for lack of coke, owing to the impossibility of obtaining sufficient cars to transport the fuel from the ovens, and many have been forced to bank down in consequence. This involves a curtailment of the production of pig iron, and a consequent deficiency of raw material in the steel and finishing mills. All classes of iron and steel manufactures are more or less affected, and the inconvenience caused to consumers is becoming felt on all sides. Considerable building is like-

ly to be interfered with by the lack of structural steel, and every industry that uses iron or steel will feel the pinch to some extent. Nor is the iron industry the only one that is suffering from the deficiency of transportation facilities. All business interests are sharing in the inconvenience caused by the shortage of rolling stock. The manufacturer cannot get his raw materials, the merchant experiences exasperating delays in the shipment of goods, and the consumer grumbles because he cannot at once secure the commodities he needs, while all unite in anathematizing the railroad companies for not providing adequate freight transportation. However, the railroad companies are not wholly, or indeed largely, blamable, for the orders for freight cars and locomotives placed during the past year have been on an unusually liberal scale, and there is every evidence that the companies have taken all reasonable steps to meet their obligations to the public in this respect. The explanation of the present difficulty lies in the abnormally large volume of current business. The enormous traffic in all kinds of merchandise has fairly swamped the existing railroad facilities, and nothing but a radical increase of terminal facilities and other appliances for handling traffic would meet the exigencies of the case. This increase, however, cannot be provided at short notice. Meanwhile, no remedy for the present trouble being forthcoming, the only thing to do is to exercise patience.

Skyscrapers for London.

With American capitalists absorbing the surface and underground traffic of the British metropolis; American machinery, locomotives, rails, tools and other manufactures invading the British market; American concerns erecting great plants on British soil; American horses carrying off the prizes on the British turf, and American women filling the ranks of England's aristocracy, the "American invasion," of which so much is heard just now on the other side seems to be a very substantial fact. The latest phase of this invasion is a proposal to introduce into London that peculiarly American institution, the skyscraper. An Anglo-American syndicate are trying to get permission to erect a twenty-story business building in the heart of the British metropolis. The scheme meets with both opposition and encouragement from the English press. It is claimed, on the one hand, that a huge structure of this kind will be utterly out of harmony with its surroundings, that it will dwarf and obscure many of the handsome buildings located near the site which has been chosen by the promoters, and that it will in no way tend to the beautification of the city. The greatest city in the world has a low sky line. Most of the buildings are but a few stories in height, and the putting up of a huge skyscraper, it is contended, would be an eyesore which would not in any way compensate for the conveniences claimed for it. On the other hand, a section of the press claim that these high buildings provide just what is urgently required to meet the wants of the enormous population of London. The business section of the city is restricted in area, and for some time past a lack of adequate facilities for the expanding needs of trade has been found. The solution of the difficulty, it is believed, would be best presented by the erection of such high buildings as now exist in the leading American cities. Moreover, in adding to the business area and to the convenience of doing business, these tall buildings undoubtedly have the advantage of providing better light and ventilation than is possible in the older and lower structures. Whether the skyscraper in London would have the advantage of rising above the

fogs which are so undesirable a feature of that city it is impossible to say. If this advantage could be demonstrated, there is no doubt that all opposition to the erection of these lofty buildings would vanish. The successful introduction of the skyscraper into London would make a radical change in that city, and would no doubt be followed by its adoption in other of the large cities of the United Kingdom, and many of the Continental cities also. It is impossible to say that this development will add to the beauty of European cities, but the utility of the business skyscraper has been proved in our own case, and, in these days of keen commercial rivalry, everything that tends to the lubrication of the wheels of business is certain to appeal to the public at large on both continents.

The Contractors' and Manufacturers' Protective League of St. Louis, Mo., have taken action which is expected to prevent sympathetic strikes during the period of construction of the World's Fair buildings in that city. A letter has been sent by the league to the Building Trades Council of St. Louis and vicinity, stating that they are prepared to extend to those contractors whose work is stopped by reason of sympathetic strikes such active and financial support as may be necessary to complete such work with labor unaffiliated with the Building Trades Council. The officers of the league have notified the Building Trades Council that unless the sympathetic strikes now in operation in St. Louis, and others which are said to be pending, are called off, labor unaffiliated with the Building Trades Council will be procured locally or outside the city and used to complete the buildings. Letters have also been addressed to the various unions affiliated with the Building Trades Council, calling attention to this action of the league, and asking that serious attention be given to the same. The league assert that they are not directing a fight against any union, and that they would regret the necessity of importing labor, but that such action will be forced upon them unless the Building Trades Council see fit to act in accordance with the notice given to them.

The sailing of the oil carrying steamer "Cardium" from Port Arthur, Texas, with the first cargo of Beaumont oil for Europe, is an event of considerable importance to the oil producing interests of the Lone Star State. The shipment consisted of 60,000 barrels, and was made by the J. M. Guffey Petroleum Company, the owners of the great Lucas "gusher." It is hoped that this shipment is merely the pioneer of large exports of Texas oil to Europe. Late advices from Beaumont report a movement looking to the consolidation of many of the Spindle Top oil interests, which is expected to embrace nearly all the oil wells on the famous hill. The greatest difficulty now being experienced by the Texas oil men is to secure enough tank cars for the transportation of their product. Many hundreds of these cars are being constructed, and all that are turned out are put into immediate use.

Census bulletins of manufacturers have now been issued for twenty-four States and Territories. These statistics, which include, however, only four of what may be characterized manufacturing States, and those the smallest of the class—Connecticut, Rhode Island, New Hampshire and Delaware—show an increase in ten years of 62 per cent. in the capital invested, of 61 per cent. in the value of output, 37 per cent. in the number of wage earners, and 33 per cent. in the amount of wages paid. The comparative falling in wages indicated in the last item is accounted for by the fact that the statistics include the Southern States, where many women and children are employed at low wages in the new cotton mills. Otherwise the figures presented show a gratifying increase which is likely to be largely expanded when the statistics covering the larger manufacturing States are presented.

The Eastern Stove Trade.

The article in the last issue of *The Metal Worker* relating to the condition of the Eastern stove market has evidently attracted a good deal of attention in the trade. We have received a number of communications relating to it and commenting in different veins upon the position taken. From these letters the following extracts will be of interest:

THE NEW YORK CITY STOVE, RANGE AND FURNACE MANUFACTURERS' ASSOCIATION; ITS RISE AND DECLINE.

To the Editor: I read the article in the issue of November 23 entitled "The Eastern Stove Trade," and noted the reference made to the New York City Association that "there is no evidence of its life."

As one who was never absent from its meetings, always punctual and attentive to all its debates and deliverances, I feel that I am competent to write its history, and, in justice to many loyal members, warranted in doing so, that those unfamiliar with the cause of its decline may know why this once powerful and useful stove association, and which for a time, at least in the estimation of many, was the best in the country, lost so much of its influence and ceased to be the great pedestal of the wholesale stove trade of this vicinity.

It is not dead but in a state of suspended animation. Its influence is still felt. Its schedules of prices, the result of the hard work of the price committees, which included some of the best heads in the stove business, are still the guide of many of its members and some still maintain them in spite of the fact that association inaction is equivalent to a release of price obligations.

Its organization is as complete as it ever was, and it can be called into renewed activity at any time.

The credit of organizing the stove trade in this locality, as everybody knows, belongs to National Secretary Thomas J. Hogan, who came here to tackle the hardest proposition of his life and succeeded.

No matter what is or may be said of it, the association accomplished great good and perhaps saved from financial embarrassment more than one concern afterward found among its detractors or who libeled the members with the dealers by calling it a trust.

No worse condition ever existed in the trade anywhere in the country than existed in New York City in 1898, and ruin to some was inevitable but for the timely organization of the New York City association and the great work accomplished of re-establishing prices on a profitable basis.

Long sessions were frequently held, members came from long distances, the interest was intense, discussions earnest and practical, officers and committees worked hard, and from the slough of despond or the bottomless pit the wholesale stove trade of this locality was lifted to a plane of respectability and reasonable profit.

For fully 18 months, if not quite two years, the association flourished and the members worked in harmony and a high degree of loyalty.

That it was so successful is more the wonder than that it did not continue to grow stronger, when one considers how many conflicting elements had to be harmonized, how many sections were represented, how many thousands of stoves there were to equalize the price of and how much outside competition it was obliged to confront.

The rocks were not unknown to the more experienced and the danger of disruption not unforeseen. Legislation followed the lines of equality as near as it was possible to do so, that no member might intentionally be deprived of his due proportion of the local patronage to cause his withdrawal.

The elements of weakness that were born with the organization were only what nearly every trade association has to take into account, except that they were more numerous in the New York City body.

The agencies that worked for harm and gradually undermined its usefulness were those only that the wiser heads mistrusted would gradually sap its strength.

New York City, the great trade center, to which all roads lead, and accessible from everywhere, was apt to become an inviting market for some manufacturers whenever, through the association, stove prices had been raised to a profitable standard, although the same concerns might have left it severely alone when conditions were the reverse. Hence a conservative policy was followed to keep off fresh outside competition as long as possible and not augment the volume of unallied competition existing at the time the organization was formed.

There are always one or more prominent concerns who will not join their competitors in an association on the ground that it is against the policy or tradition of their house to do so. They sympathize with, rather than oppose, the movement for the betterment of conditions and promise co-operation as long as the association behaves itself and its members are not found cutting prices.

In every case of this kind trouble sooner or later may be looked for. The salesman for such a house becomes a self appointed detective. He goes gunning at once for evidence of price cutting by one or more of the association members, all of whom he is sure are in league against the house in which he is employed, and he is anxious to rescue his employers from the snares of bunco competitors.

Documentary evidence has first preference, but is impossible to find, and direct oral testimony is next sought for without success.

Failure to obtain proofs of guilt only whets his determination to convict somebody. That somebody is generally the one who has been his most bothersome competitor. At last a dealer is found who has purchased some goods from the suspected competitor, and the salesman is convinced that cutting the price won the order. He puts the dealer through the thirty-third degree, but finds his conduct most exasperating in not admitting that he bought lower and showing the bill. Nothing can be got out of him except a shrug of the shoulders and a slight wink of the left eye; but that is enough. He goes home and confides the information to the manager.

He saw no bill, but the dealer's actions are all he needed to be convinced that the order had been turned by price violation. The manager does not act on this, but the polson has been administered to his mind and doses are given with frequency without anything to serve as an antidote, as he does not attend the association meetings, confer with his competitors or use the association machinery to investigate the truth or falsity of any suspicious charges.

There is the merchant of superior dignity, who treats his competitors courteously, but declines to join with them in an association on the high ground of inexpediency. His prices are always higher than any of the others and above the association schedule, so that it would be hurtful to him to join. It is generally experienced that such merchants step down from their lofty perch and mingle with the common herd, even at the expense of some dignity and their high ideals, as their prices are found to be cut below association rates just enough to give rise to a suspicion that the schedules furnished them by the association were used for just that purpose.

There is the little fellow who really thinks it funny that the manufacturers should care a straw about him. He sells so few goods he should not be minded at all. Nobody will feel his presence in the market. He is but a very small toad in the puddle. Let these great big manufacturers go right ahead and perfect their organization, make prices what they should be and drop such small fry out of consideration altogether.

More respect is due to the other little fellow who says frankly that he will not join because he cannot get as much for his goods as A, B or C, and he would not pledge himself to not sell below a certain price because he might need the money so bad that he would have to.

There is the concern who never will say that they will not join, but hold out hope that they may come in later, and if they finally do join it generally develops that they have placed a great many blanket orders

covering certain customers' demands for a year or two ahead.

Inside of any association there are several members whose course of action or inaction tends to weaken its influence.

First, there is the member who does not attend the meetings and is always underselling until new prices are called to his attention.

Second, the member dull of comprehension, who is always misinterpreting the rules, though ever ready to do right when they are explained, and regrets that orders taken under a wrong version will have to stand, as he is under a contract to furnish the goods.

Third, the member whose clerks are always making mistakes, for which he is sorry, but will write customers withdrawing prices from that date.

Fourth, the member whose cut prices were for "a few old pattern goods" which he seems never to sell out.

Fifth, the member who is always selling under an old contract.

Every trade association operating under a so-called gentlemen's agreement is short lived so far as its vigor and usefulness are concerned. It may exist for years as an organization in skeleton form, but as a continuing potent force, and an organization whose rules, regulations, prices and terms are strictly enforced, uniformly observed, and whose members all strive for improvement and aim at perfection of the purposes for which it was formed, it fails.

In its very nature many of its parts commence at once to try and break the cohesion by surreptitiously doing what the association is organized to prevent—the selling of goods or making of terms below a legislated standard.

It is impossible to equalize the honor of men. One man will stand by his promise although his business and the heavens fall, or he will honorably resign. Another will violate the rules with audacity. Between these two there can be no compromise. Another will trim, dodge and quibble.

It is impossible to equalize the brains of men. A very dull man is apt to be suspicious of every statement or resolution that may be offered by a very shrewd man, and will always think that he sees some attempt to take an unfair advantage of him, while such is not at all the fact.

In an open market he does not complain, having no right to do so, but in a trade association he feels that his rights are being transgressed.

Again, there are scores of unequal goods, the age and style of patterns, equalization of which it is almost impossible to accomplish with satisfaction all around.

Another source of dissatisfaction exists in the fact that a small manufacturer may have but one size of an article to offer to a certain class of customers, while others have other sizes below it, and he insists upon a differential that will enable him to sell his large size at a price nearer that of the smaller, regardless of the difference in cost.

The first departure in allowing such differential brings requests from others for similar consideration on other lines.

Then there is the manufacturer whose jobber in another section comes to the newly protected field and undersells the maker, who is a member of the association, which causes irritation.

For reasons such as I have narrated, perhaps all of them, perhaps more, but less of a nature affecting the faith of the members than the disturbing element from without, the New York Association lost interest for its members.

There never was any breach or quarrel, never any stampede from it, or any spite prices quoted. No reaction of consequence has occurred since the former recommendations of the association as to prices were considered to be inoperative, simply because prices were based on reason, and lowered when the market required, and left no margin for serious cutting that would not do violence to the cutter's cost and remind him forcibly of 1898.

Prices during all the season have been fairly well maintained and generally the business has been con-

ducted on a plane of reason, respectability and reform as compared with some years in the not remote past.

For this result some thanks to the association wherein practices and policies and costs were threshed out so thoroughly and understandingly that everybody knows better what is the breaking strain of his prices than he did before it was brought into being. Yours truly,

EQUITY.

A MANUFACTURER'S CRITICISMS.

To the Editor: We have carefully read the article in your issue of 23d inst. There are several paragraphs which we do not fully understand.

We were not aware that, so far as manufacturers may have agreed upon prices and rules, exceptions had been made that governed to a greater extent than the agreement. Your research in this direction is certainly a revelation to us.

The independent action to which you refer has been only too pronounced. It seems hard for some minds to consent to unite in judgment with others even to secure good results.

As to prices and concessions, we are glad to be able to say that our company have universally followed out their long practice of adopting fair prices and using all dealers alike.

The "bad blood" and "restive under restraint" both require an explanation for us to know what is meant by them.

Some things called violations are only misunderstandings, and we have found that in most cases men are about as honorable to-day as ever, and quite as much so in stove manufacturing as in any other business.

What you call "paid secretary," so far as Eastern Pennsylvania manufacturers are concerned, is simply a weather bureau in charge of a statistical reporter.

In our mind there is no call for a magnificent leader so long as we have the efficient Executive Committee to look to for judgment and advice.

If it has to be the "survival of the fittest," we will risk our position along with the rest.

ANOTHER INTERESTING LETTER.

To the Editor: The Eastern Stove Association question does not seem to be one of wrong methods or ideas. For those in use have been used in other trades and proved successful.

The machinery inaugurated is all right, but the trouble is with the man or men who run the machine. Like the Spaniards, their guns were all right and of the approved type, but the men behind the guns were not right. It is so with the Stove Association. Their rules and regulations are correct. Their aims are right, honest and true, but the men themselves are not. So what can you expect?

No business man or association of business men can fool many people very long before he is found out and his finding out is what weakens the concern or the association. The flexible backbone seems to be the prevailing element among stove manufacturers. A chicken hearted fear to do business correctly and compel the other fellow in the association to either do the same or fight, and when the colored man in the wood pile shows his head, hit it and hit it hard, and if that cannot keep the colored man out of the wood pile, then load it with the proper kind of gunpowder and bust him up.

This may seem harsh, but if the honest man remains in the association his business leaves him, and he has the choice of either leaving the association or his business leaving him, and one large manufacturer of the New York City Association had to make that choice and decide just that condition, whereas if the colored man had been hit square between the eyes it would not have been so.

The man or set of men that have the backbone to do such work and carry the power to force it, may not be born—if he is we do not know him—yet he may exist and later come forward on the stage and show himself. But that something more than moral suasion must be used to keep associations not only together, but working to the profit of all and not to that of a few, is evident to every thinking stove manufacturer. The strong man was found in the steel industry, and in other industries; so

it is possible he may show up some day in the stove business.

Good times will not last forever, and the strong man will be needed then more than just now, so that it behooves the members who really care to keep their eyes open and ears to the ground that they may find him.

That it is better to run with machinery that does not turn out exactly the quality of goods you want than not run at all goes without question—but, say, don't it make you sick when you look at the fine quality of work others turn out with less cost and trouble? Can our associations reach the higher quality?

C. B. E.

THE PROFITABLE DISTRIBUTION OF GAS STOVES.

In order that gas stoves might be introduced quickly the gas companies adopted the method of selling these stoves at practically the same price that they paid for them, and, being large buyers, they have frequently been able to purchase gas stoves at lower prices than those at which the regular stove trade could buy them. A correspondent who has been identified with the gas stove trade for a number of years, and who is thoroughly familiar with all its usages, sends us the following letter:

"The article on the gas, gasoline and oil stove trade printed in *The Metal Worker* a short time since covers many points of great interest, particularly to the manufacturers of gas stoves. It must be understood that the gas companies have been the principal distributors of the output of the manufacturers, and to them is due the rapidity with which such goods have been brought into popular favor. It must not be forgotten, however, that, owing to the desire to secure the business of the gas companies, close, and I might say fierce, competition resulted among those manufacturers who desired to obtain it. The prices of gas stoves have been pounded down to such an extent that a fair return is not received for the labor, material and enterprise necessary to produce them. In some cases goods that may be said to have had their day are entered into competition with later and better productions. Yet on price old goods are winners. The fact is that enterprise in the production of new goods is in a measure stifled, and the consumer is unable to obtain that which progress could readily furnish—an economical, safe and efficient gas stove.

"Owing to the fierceness of the desire to sell their product conference among the makers of gas stoves, having in view the betterment of profit, is practically futile, at least in the East. An earnest and persistent effort to this end was tried a few years since, but it resulted in a reduced business for those whose desire to secure an adequate profit on their business led them to maintain an increase in the prices quoted on their goods. The temptation to sell large orders was too strong for some who attended the conferences, and they accepted orders at the old prices, to the disadvantage of those with whom they were supposed to co-operate.

"The business of making gas stoves should be both profitable and perpetual for many reasons. First, there is an increasing demand, and then the improvements in gas stove construction have followed one upon another very rapidly, and the active life of a gas stove, so far as its sale is concerned, is very brief. There are coal stoves for cooking and heating purposes that have held the market for 20 years, but this is not so with gas stoves. Probably four years would average the limit of the demand for the most popular goods. In consequence the gas stove business has not come up to the expectations of those who have entered it as a new field for business enterprise. It may be said, in fact, that this branch of trade has experienced more shadow than sunshine.

"Perhaps the greatest evil of all, however, is the consignment of goods. Very little has been said on this point, and, frankly stated, it is too sore a point for manufacturers to dwell upon. Happily for the trade, however, it has diminished somewhat during the past two years. In many instances, while the gas companies are large purchasers of gas stoves, nearly all the stock that they carry is on consignment, leaving the burden en-

tirely with the manufacturer. Naturally this could not be otherwise, when it is considered that the gas companies merely sold the stoves in order to increase their sale of gas, and not for the profit that could be made on them. In view of the fact that the manufacturers had to consign the goods and furnish the capital to carry them for the distributing branch of business, it is probable that if they had been more vigilant in taking care of their interests better prices could have been secured.

"There can be no doubt that the distribution of gas stoves through the regular business channels—the stove dealer and the hardware merchant—would result beneficially to the manufacturers. In some small cities this has been tried with success and advantage to all concerned. Doubtless, if this method was adopted by all, it would prove a success. At least it would awaken the interest of the dealer if the goods could be sold by him and on their merits. At any rate his interest would not be lessened, and it is probable that a higher grade of gas stoves would be more generally used. It is my opinion that the gas companies in the larger cities are not opposed to the natural distribution of gas stoves, through the medium of the hardware merchant and the stove dealer, now that the objective point has been reached of the rapid introduction of these stoves so as to create an increased demand for gas. It is possible that if it be shown to be desirable, and the manufacturers would present this view of the case to the gas companies through an organization, these companies could be influenced to pursue a course that would leave the distribution to the regular retail dealers. The gas companies in the city of Milwaukee at one time made free connections to their service pipes for all gas ranges sold by the dealers. The statement has been made that a percentage was also reserved for the regular dealers on all sales effected on gas goods, which had the effect of stimulating the regular dealers to enter more heartily into the work of increasing the scale of gas stoves, and thereby extending the demand for gas, which is the principal desire of the gas companies."

Cooking Exhibit and Range Sale.

Those who adopt special methods for increasing trade on any line will be interested in a plan which has been found successful by the enterprising house which has brought it to our attention.

The Holder-Athey Hardware Company of Bloomington, Ill., recently had a sale of steel ranges during the week of a cooking exhibit. A section of their show windows was devoted to the ranges, and in the next section were heating stoves. The week following the exhibit parallel horizontal cords were strung in front of the stoves next to the plate glass, and on the cords were hung cards, of which the accompanying cut is a repro-



Show Window Card.

duction, reduced in size. The cards were of heavy Manila stock, $7\frac{1}{4} \times 13\frac{3}{4}$ inches in size, printed in red ink. These were attached to the cords by wire fasteners near the upper corners. A much larger card, suspended in the window, explained that the other cards represented the number of ranges sold the previous week. The exhibit was advertised in the daily papers of the week previous, and during the exhibit a large streamer was hung across the front of the store. A range was in constant operation, biscuits were baked and served with coffee at little tables. During the week 37 ranges were sold, besides as many or more other stoves. The company have had these exhibits a number of times, but this one was the most successful. The company, however, consider their best advertisement the several hundred ranges used in their vicinity which had been purchased in their store.

The Tropic and Beacon Sunshine Furnaces.

"Healthful Heat" is the title of a neatly printed pamphlet which is being distributed by the Reading Stove Works of Reading, Pa. It is pointed out in the introductory pages that heat of the quality indicated may be obtained by the use of Sunshine furnaces, of which the company manufacture a variety adapted to cover all reasonable requirements. Special reference is made to the Tropic Sunshine and Beacon Sunshine as possessing large heating capacity, giving the dealer and consumer a maximum of service for a minimum of cost. The Tropic Sunshine, in its design and construction, is thoroughly up to date, and the furnace is built on advanced principles. The combustion chamber is large and effective, the radiator, made of either sheet or cast iron, is so arranged as to necessitate the heated gases traversing a long distance; the fire pot is heavy and the grate of the most modern type. In the construction of the heater the company state that their first consideration was to make it air tight and gas tight. All of the necessary joints are made with deep cups and sand sealed. All parts are made interchangeable so that repairs can be readily furnished.

The Beacon hot air furnace has been brought out in order to meet the demand for a cheaper heater than the one just referred to. This has been done by use of a new radiator, and a change in the upper part of the Tropic, the essential features being practically the same as those mentioned. It is made with a plain front only. The company state that it is not a light flimsy furnace, but a good heater for a small amount of money. In connection with the illustrations and descriptive particulars, are tables giving dimensions and capacities together with other data likely to prove of interest in this general connection.

The company have also issued a folder intended for display purposes showing some of their leading lines of ranges and heaters. Among the number may be mentioned the Othello, Colonial Sunshine and Mystic Sunshine ranges; the Golden Sunshine, Regal Sunshine, Brilliant Sunshine, and Bonnie Sunshine parlor stoves; the Sunshine Oak, the Sunshine Hot Blast, and the Daisy Sunshine. This folder is issued in a neat cover carrying an inscription to the effect that "The Sunshine Stove Shop is continually turning out something new; hence our exclusive agents are always in the lead." The company announce that their heating department is always ready to supply information relating to furnace heating or installing steam and hot water jobs.

Pioneer Stove Company.

The Pioneer Stove Company, Columbus, Ohio, are sending out a circular containing an announcement to the effect that they have succeeded the old and well-known firm of C. S. Reynolds & Co., stove manufacturers, and that all orders for future shipment with C. S. Reynolds & Co. will be filled carefully and promptly by them. "In addition to the present large line of stoves, ranges, heaters, repairs and supplies," they say, "we are adding new and desirable patterns, and have arranged to greatly increase our facilities for doing business, so that now we are able to offer you anything in the way of stoves. Our offices and warehouses are still located at the same places, and if you favor us with a call, you will find your old friends here to welcome you, or, we will be pleased to quote you low prices by mail." They also make the statement that they have a new line of Round Oaks and Hot Blast heaters, and give the names of their coal and wood cooking and heating stoves. The last page of the circular states that the business was established in 1826, and was incorporated in 1901 as the Pioneer Stove Company of Columbus, Ohio.

JEWETT & Co., with offices and foundries on Mississippi street, Buffalo, N. Y., are meeting with a gratifying demand for their goods and report a very satisfactory increase in the volume of their business. The foundry has been substantially in continuous operation since early in January, and the indications are that the plant will be kept fully occupied right up to the holidays.

A Fine Illuminating Display.

An interesting feature of down town St. Louis, and one which attracts the stranger and the resident alike, is the fine electrical effect produced by the 600 incandescent lights and 16 arc lights outside and inside of the building occupied by the Ringen Stove Company on Sixth street, between Locust and St. Charles streets. The company take great pride in the arrangement of their store and window display, and they are to be congratulated on the success of their efforts and the striking manner in which their ideas have been carried out. Their showroom is a thoroughly modern and fine one in its appointments, and is the largest in its line in the city. In fact, it is a question if a better one can be found anywhere else in this country. When the full power of illumination is turned on the building from sidewalk to roof is one mass of light of different colors, tastefully arranged, with the well-known "Quick Meal" title and the name "Ringen Stove Company" standing out boldly. It is an expensive method of advertising, but it wins the public eye and accomplishes its mission most satisfactorily.

ODD PLATES.

FRANK BALDWIN of New Castle, Pa., has been appointed general manager of the Pittsburgh Stove & Range Company, with headquarters at Pittsburgh.

W. H. COLEBROOK SONS & Co., Syracuse, N. Y., do not intend that the trade shall suffer from lack of information in reference to their Asbestos Furnace Cement and Stove Putty and a variety of other Stove Dealers' Supplies which they handle. The company's latest method of calling attention to their product is a card showing the fact of a supposed turkey sticking out from the top of a paper bag, with the inscription, "Don't Miss the Stuffing." The stuffing is a circular in reference to their goods.

THE MOUNT PENN STOVE COMPANY, Reading, Pa., are distributing to the trade a very neat spring tape measure, 36 inches in length. It is of vest pocket size and will be found a very convenient article for measurement in connection with Stoves, Heaters and Ranges, as well as other articles.

Novelty Coal Hod.

H. H. Franklin Mfg. Company, Syracuse, N. Y., have just put on the market the novelty coal hod, No. 3, here-



Novelty Coal Hod.

with illustrated. It is a fine metal casting, silver plated, polished and lacquered and particularly suitable for holiday trade. Its extreme height, including raised ball, is 2½ inches, the body of it being designed for holding toothpicks, pins, matches, cigar ashes, or any small trinkets. They are put up in individual boxes and sold to the trade by dozen or gross, and can be retailed at 25 cents each at a good profit.

WILLIAM L. DAVIS, president of the Davis & Wright Company of Keene, N. H., died from pneumonia at his residence on Dunbar street, on Monday, November 25, at the age of 78 years. He originally learned the trade of a blacksmith, but in 1865 he went into the Stove and Tinware business with Joseph Wells. This firm were suc-

ceeded by the Davis & Wright Company, of which he was the president. He celebrated his golden wedding on October 27, and is survived by a widow, one son and three daughters.

Washington Hardware Association.

The annual meeting of the Western Washington Hardware Association was held at Tacoma, Wash., on November 13. The most important action brought up was the matter of changing the name of the association and the enlarging of its scope. Owing to the fact that there is no Hardware association in Eastern Washington and that Hardware dealers in the eastern part of the State have shown a desire to come into the association, it was decided to change the name of the organization to the Washington Hardware Association and to invite all Hardware dealers in the State to join it.

The question of affiliation with the National Retail Hardware Dealers' Association was brought up during the meeting, but it was decided that for the present year all the endeavors of the members should be directed to the building up of the State organization, and that formal application for membership in the National Association should be made at the next annual meeting.

The following officers were elected to serve during the ensuing year:

Henry Mohr, Tacoma (re-elected), president.

F. M. Scheble, Wenatchee, vice-president.

D. G. O'Brien, Seattle, secretary.

C. W. J. Reckers, Seattle (re-elected), treasurer.

It was decided to admit traveling men representing hardware firms as honorary members of the association.

After the close of the session the members participated in a banquet given at the Hotel Tacoma. An orchestra was in attendance, and an interesting and enjoyable evening was spent.

The following members of the association were present: Henry Mohr, Tacoma; R. I. Morse, Whatcom; J. W. Campbell, Seattle; Charles Hood, Puyallup; C. D. Patch, Seattle; Mills & Cowles, Olympia; William Christensen, Ballard; J. F. Wellborn, Whatcom; Thomas Moran, Arlington; C. S. Enger, South Tacoma; F. M. Scheble, Wenatchee; A. Gehri, Tacoma; George L. A. Forck, Tacoma; W. M. Olive, Mission; G. W. Shannon, Anacortes; A. M. Bryant, Buckley; Frank T. McNitt, Centralia; Mr. Osgood, Everett; D. G. O'Brien, Seattle; C. W. J. Reckers, Seattle.

Monongahela Valley Retail Hardware Dealers' Association.

Under date of the 8th inst. the following circular was mailed to all retail hardware merchants in Western Pennsylvania by J. F. Frye, Charleroi, secretary of the Monongahela Valley Retail Hardware Dealers' Association:

That a closer social and business relation should exist among the Retail Hardware dealers of this State cannot be denied. In order to promote this greater fellow feeling, it is desired by many that a conference be called to which all legitimate retail dealers are cordially invited.

The place suggested is Pittsburgh, and the time, first week in December. Some of the officials of the National Retail Hardware Dealers' Association will be present at this meeting, and it is expected that much good to the retail trade will result therefrom.

Please state, on the inclosed postal, whether or not you can be present, and, after a sufficient number of replies have been received, you will be notified of the date of the conference.

The response to this circular, we are advised, has been so generous and encouraging that it has been decided to hold the conference in question in Pittsburgh on Tuesday, December 10. The place of meeting will be designated in a later circular.

If any of our readers in that section have failed to get a copy of the above circular, Mr. Frye requests that they send him their names and addresses, as it is desired to interest all legitimate retailers of hardware.

As indicated in the circular, several of the officials of

the National Retail Hardware Dealers' Association will be present at the meeting, which, it is expected, will develop much that will be of benefit to the trade in Western Pennsylvania.

Stove and Hardware Dealers.

THE AVERY STAMPING COMPANY, Cleveland, Ohio, have added a smaller sized Steel Spider to their line of Never-Break Cooking Utensils. It is designated as their No. 6 Breakfast Spider. The cooking surface of this size is 7 inches in diameter. It is referred to as very handy for cooking small quantities of ham and eggs, &c. The company state that they have encountered a demand for a Spider of this size, which is especially adapted for use in families where there is only a small meal to be cooked, and they are expecting to have a large sale of it.

THE GRAND MFG. COMPANY of Milwaukee, Wis., are about to put on the market a new Clothes Washing Machine which they call the Grand. It consists of a frame work supporting a tub made of galvanized iron. Within the tub there is a frame on which the clothes are laid and a roller which runs back and forth over the clothes to effect the washing. A sheet of water is thrown over the clothes each time the roller is operated. The roller is held in contact with the clothes by means of a spring which adjusts itself to the thickness. Under the galvanized iron tub an oil stove is provided for keeping the water in the tub hot while the washing is being done.

THE STAR ENAMELING & STAMPING WORKS, Allegheny, Pa., have been sold to a company who will remove the plant to McKeesport, Pa. The price paid was \$50,000.

MAINE MFG. COMPANY, Nashua, N. H., issue a folder, which they are ready to furnish to their customers in liberal quantities, printing in the name and address of the merchant. The folder is devoted to their White Mountain Refrigerators and attractively calls attention to the merits of this line.

MONARCH REFRIGERATOR WORKS, Burlington, Vt., have gotten out their illustrated catalogue and price-list for 1902 of the Monarch Dry Air Refrigerators, with removable and cleanable flues and removable ice chambers, zinc lined and nickeloid lined. Their line comprises Domestic, Sideboard, Water Cooler and Grocers' Refrigerators, Ice Chests, &c.

STURGES, CORNISH & BURN COMPANY, Chicago, have issued a Milk Can catalogue, which contains all their standard patterns of Railroad and Cheese Factory Milk Cans, together with their dairy line.

SHIPMAN, BRADT & Co., DeKalb, Ill., are distributing an illustrated price-list of their Hardware Delivery Wagons. The manufacturers call attention to the low down, short turn, high wheel, straight bottom, short coupled, light draft features of their Wagons. They have lately added to their line a new style Wagon, No. 63, which is referred to as just the Wagon for Stoves, Furnaces or any heavy goods. It is easy to load, the body being only 22 inches from the ground. Extension for ladders and spouting is furnished if desired. The Wagon is attractively finished and offered in four capacities, from 1000 to 2000 pounds.

The large plant of the National Enameling & Stamping Company in the Williamsburg section of Brooklyn, N. Y., was totally destroyed by fire at an early hour on Thursday morning, November 28. The factory occupied the block bounded by North First and North Second streets and Bedford and Driggs avenues. The origin of the fire is unknown. When discovered, at 2 o'clock in the morning, it had attained such strength that all the efforts of the fire department were unavailing to save the building. The night watchman of the plant lost his life in the conflagration. The factory was originally owned by the Haberman Mfg. Company, and was absorbed by the National Enameling & Stamping Company on the formation of that corporation. Over 700 hands were employed. A large amount of machinery, stock and finished goods was lost. The loss, which is heavy, is said to be entirely covered by insurance.

Vandergrift, a Workingman's Paradise.

The betterment of the workingman's condition is not a new idea. Many projects have been devised with this aim in view. Some of them have been fairly successful, while others have been dismal failures. The cause of these failures has not always been the same, but probably more can be traced to an imperfect comprehension of human nature by the projector than to any other single reason. Philanthropy is by no means a rare virtue, every community being blessed with individuals who are sincerely desirous of lightening the burdens and alleviating the distresses of their fellow creatures. But well meaning efforts in this direction are frequently of little practical value from a worldly point of view. The recipients of philanthropic attentions, who are not purely objects of charity, may accept the benefits of proffered assistance in bettering their condition, even if obligations are imposed upon them, but in time they will chafe under the feeling that they are being thus treated for an ulterior purpose and that they are losing their manly independence. As an example of a well conceived plan for the improvement of workmen, for enabling them to enjoy to probably the fullest possible extent the blessings, comforts and even luxuries of life compatible with the circumstances of wage earners, at the same time affording them perfect independence of action and the opportunity to develop individuality, the town of Vandergrift presents an unusually interesting study to the sociologist. It has been the extreme pleasure

of a representative of *The Metal Worker* to visit this town and to gather some facts concerning it, which are herewith presented, together with a number of illustrations.

How It Came Into Existence.

Vandergrift is located 38 miles east of Pittsburgh on the West Pennsylvania Railroad. It is in the beautiful valley of the Kiskiminetas, almost surrounded by thickly wooded hills. Here a tract of gently sloping ground, comprising 640 acres of farm land, was purchased a few years since by the Apollo Iron & Steel Company, now the American Sheet Steel Company, whose operations at Apollo, a short distance further up the river, had outgrown the space available for their works. Ground was broken for the new town in June, 1895, and simultaneously the construction of the new plant began. The first sheets rolled here were turned out on October 29, only four months after. The plant then consisted of 13 mills, but the business of the company speedily outgrew the capacity of the original works, and eight more mills were soon added, making 21. It was described in *The Metal Worker*, June 26, 1897. At present the construction of eight more mills is under way, so that the works will shortly have 29 in all. Nearly all the steel for these mills is produced in open hearth furnaces, which form part of the local plant. The annual output

of finished product, which will be greatly increased when the new mills are completed, has been 130,000 gross tons of sheet bars, 105,000 net tons of black sheets, and 170,000 net tons of galvanized sheets. The large output of galvanized sheets is due to the fact that all sheets intended to be galvanized are brought to the Vandergrift plant from the other works of the American Sheet Steel Company in the Kiskiminetas Valley, located at Apollo, Leechburg, Saltsburg and Hyde Park. The relative importance of these works is shown by their pay rolls, the Vandergrift works paying out \$1,500,000 per year in salaries and wages, Leechburg \$390,000, Apollo \$210,000, Hyde Park \$200,000, and Saltsburg \$150,000. The pay roll of the Vandergrift works will be increased 35 per cent. by February 1 next. It is the expectation of the management that this plant will continue to be en-

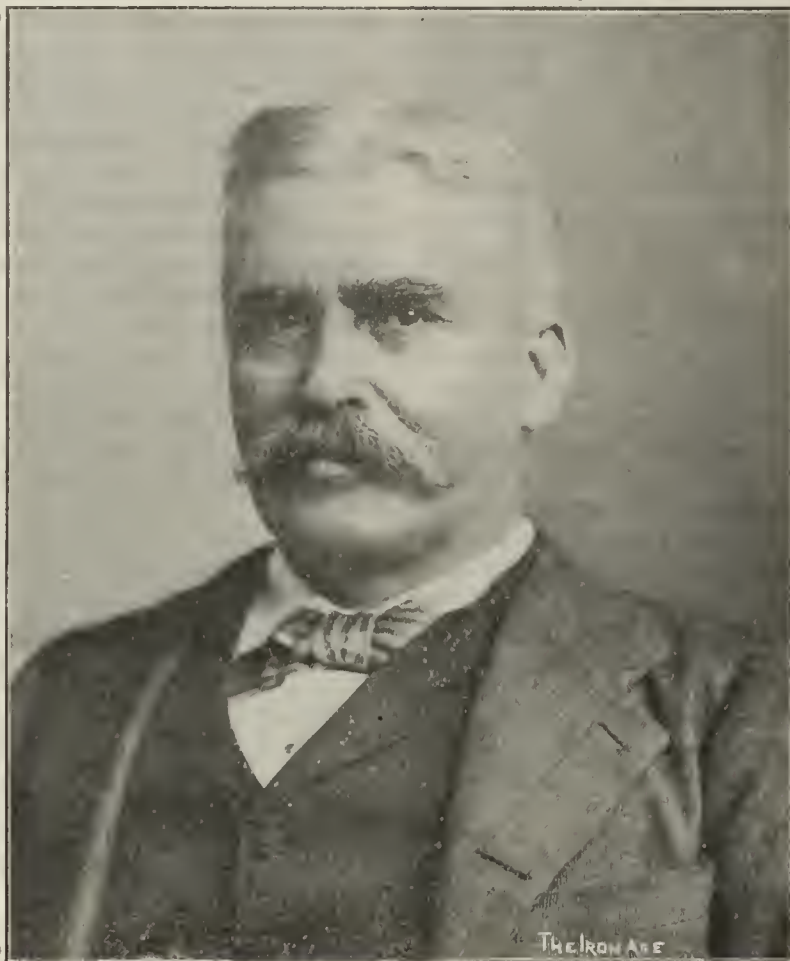
larged, it being their ambition to make it a 50-mill plant. The arrangement of the buildings will enable this to be done without impairing the original relations of the several departments.

A Great Industry Builds Up a Large Town.

The foregoing historical and statistical statements have been made in this connection for the purpose of enabling the reader to get a comprehensive grasp of the situation. So large an industrial undertaking could not have sprung up in the time mentioned, and on what was a farm when the first sod was broken, without attracting a large population to its vicinity. The town of Vandergrift now contains over 6000 inhabitants. While a roll foundry and some minor establishments have recently located there, the dependence of the citizens is so largely

based on the operations of the sheet mills that the latter must be closely considered in any observations made relative to the lives, habits and surroundings of the people.

When the managers of the Apollo Iron & Steel Company decided to build the new plant they also decided to lay out a town which would be so superior to the ordinary industrial settlement that it would attract a high class of workingmen. The financial benefits to accrue from the sale of lots were not overlooked, but this phase of the undertaking was made subordinate instead of paramount. The site selected was ideal. The mills were laid out on a comparatively level part of the tract. The ground set apart for the town slopes up gradually from the Kiskiminetas River, affording perfect conditions for drainage. The services of Frederick Law Olmsted, the famous landscape gardener, were secured in making the plan of the town. He laid out wide streets, not crossing each other at right angles, but forming arcs of a circle gently curving with the contour of the ground. The plan provided for a number of small plots to be ornamented with flower beds or shrubbery. Thus the beginning was made for artistic effect, which seems to have been deeply impressed on the minds and habits of the people. The lots as laid out were of good proportions, with an alley running through the center of every block.



GEORGE G. McMURRY,

The Founder of Vandergrift.

A complete system of sewerage was installed, pipes were laid for gas and water, connections were run to every lot to prevent the streets from again being torn up, and the streets and alleys were then paved handsomely and durably with vitrified brick. It was intended from the beginning that the town should have no outhouses.

Individual Tastes Consulted.

When all the preparations had been made, the men who expected to be employed in the mills were given the first opportunity to purchase lots. They had this preference for an entire week. The price made was the average price realized for five years for lots of the same size in the neighboring town of Apollo. No restriction was imposed on the purchasers save with regard to the sale of liquor. No liquor is permitted to be sold in the town. The lots were sold with no stipulation as to building lines or the character of the house to be built. Every man was permitted to be guided by his own taste. The company erected no houses and have none for rent, established no store and engaged in no branch of business outside of the manufacture of sheets, except such as were absolutely necessary in founding a new town. They organized a land company to look after real estate matters, as well as gas, water and electric light companies, but embarked in no line which brought them into competition with private enterprise. Further, no official, manager, superintendent or foreman can be interested in any business dependent to any extent upon the patronage of workmen. As soon as the workingmen purchased lots they consulted with their neighbors and established building lines or decided on uniform terraces in front of their houses where such were desirable. Instead of erecting plain or homely structures, they were inspired by their surroundings to study architectural graces, and numerous beautiful houses were built in the very infancy of the town. To-day it is one of the prettiest towns to be found anywhere. Every street is a revelation to the stranger who is familiar with other workingmen's towns. The houses are individualized, not built after a monotonous pattern. And they are tastefully and even artistically and luxuriously furnished. Nearly every house has its piano and its library, indicating the refining and elevating influences of the social life of the community. Every one, of course, has its own bathroom and other sanitary conveniences. The high character of the population is shown in the neatness with which the children are dressed.

Cheapness of Living.

The natural advantages of the locality add much to the charm of living in Vandergrift, which the workingmen themselves have named "a workingman's paradise." It is in a natural gas district, and every house uses this convenient fuel for cooking and heating, and sometimes for lighting, although electric light is generally used. Thus much of the labor and dirt incident to housekeeping are avoided. It is, further, only 3 miles from springs which have long been famous for the purity of their water. From these springs the supply of water is piped to the town. So excellent is the quality of this water that not a single case of typhoid fever has originated in the town from the date of its settlement. Coal is mined abundantly within a few miles and can be had cheaply for any purpose for which it may be required. The citizens thus enjoy great privileges, as may be seen from the statement made us by a housekeeper, whose house has ten rooms, all heated by a gas fired furnace in the basement, while all cooking and laundry work are also done with gas, that for four years the cost of his gas has yearly averaged \$34.46; electric light, \$16.83; water, \$12.75, and taxes, \$33.75.

The net rate for natural gas is 20 cents per 1000 cubic feet. The rate for electric light is 10 cents per 1000 watt hours, with a discount for prompt payment of 10 per cent. on bills under \$4 and 20 per cent. on bills over \$4 per month. The water consumed is measured by meter, the rates being based on the average rate of consumption for the preceding three months, ranging on a scale from 22½ cents per 100 cubic feet for 25 cubic feet per day to 6 cents per 100 cubic feet for 3000 cubic feet per

day, with 10 per cent. discount for prompt monthly payment.

The citizens govern the town, which has been incorporated as a borough under the laws of Pennsylvania. The officers thus elected by them have charge of the schools, look after the peace and good order of the community, and supervise all public improvements. They have erected good school houses, raising money for that purpose by issuing bonds, the land company donating the ground. The company also donated ground for four churches when the town was started, stipulating that each should cost not less than \$15,000, of which they further paid one-half. Since then several churches have been built by other denominations. The casino, which is a fine large building for public assemblies, was mainly built by the citizens. It cost \$32,000, the company donating the ground and \$14,000. In addition to assembly rooms it contains reading rooms and a fine free library having 2500 volumes. It is understood that the gas, water, electric light and telephone companies will be turned over to the citizens of Vandergrift if they desire and are prepared for municipal ownership.

The Character of the Workingmen.

As before remarked, the aim of the builders of Vandergrift was to attract a high class of workingmen. This they have succeeded in doing. It is, however, a remarkable settlement of young people. It is believed that in it hardly a dozen persons can be found over 50 years of age. The skilled men employed in the mills, from superintendents down, will not average over 32. This has not been brought about by any forced arrangement, but probably demonstrates that young men are more likely to settle in a new locality than old ones. Further, the workingmen are largely natives of the locality, sons of farmers or of workingmen in nearby towns. It is believed that not over 10 per cent. are foreigners, and these are principally employed in the galvanizing department, where the character of the work is distasteful to men fitted for a more skilled vocation. Among such a high class of workingmen a general spirit of good fellowship is shown. They freely and willingly assist one another, their intercourse being remarkably free from discord. Here the influence of the management and the power of a good example are seen. It is a cardinal principle in the Vandergrift works that every man shall be treated as a man, whatever his station may be. If a roller has a difference with a scrap boy, the superintendent gives a hearing to both, and if the scrap boy has been unjustly treated the roller is compelled to make amends. Any man having a grievance is invited to make it known to the management, and if on investigation the complaint proves to be well founded the trouble is corrected. All superintendents, to the highest, know the men personally so as to be able to call them by name and take pains to speak to them. Thus a bond of friendship and mutual interest is created and sustained. In the center of the plant, on its own separate plot of ground, stands a completely equipped emergency hospital, in which a trained nurse can be found day or night, ready to attend any one suddenly taken ill or injured. In serious cases a surgeon is summoned and is on hand in five minutes.

The Wise Policy of the Management.

The well being and prosperity of a town depend upon the steadiness with which the workingmen are employed. The happiness found in Vandergrift would be far less if the heads of families earned a precarious living or worked in an establishment which closed at frequent intervals. The policy of the managers is to run uninterruptedly, recognizing practically but two holidays in the year—namely, the Fourth of July and Christmas. They do not even shut down the customary four or five weeks for repairs in midsummer or midwinter. The sheet mills run in three turns of eight hours each, the last turn for the week ending at 8 o'clock on Saturday morning. This affords ample opportunity to change rolls, make repairs, clean out mill pits, &c. The open hearth, bar mill and galvanizing departments are run on two daily turns of 12 hours each. Care is taken to give every man a full day of rest each week. Day and night millwrights are employed, and a general cleaning up takes

place on Saturday, so that the machinery is always kept in good condition.

The men are paid on Friday, the money being taken to the mill and paid to each man wherever he is employed. He is not obliged to go to the office and stand in line. No roller pays the hands under him, but the company pay each man his own wages. Every one knows what is due him, as those who are paid on a tonnage basis receive a slip every day showing what they turned out the previous day, thus enabling them to check their accounts.

The works at Vandergrift are free works, no union rules being tolerated. The consequence is that the lucrative positions in the works are open to all who show fitness. It may be said that civil service applies here. If a new roller is needed, a man from some subordinate position is promoted. No union is permitted to send an unknown man from another mill, to keep the craft of rolling confined to a select circle. The same methods apply throughout all departments. Men are advanced as they display merit or special aptitude, and worth receives its proper recognition.

It is not surprising that men working under these conditions and with these surroundings were unwilling to strike when the effort was made to "call" them out last summer. Among such men agitators and fomentors of strife can obtain no foothold.

To Whom the Credit is Due.

All this has been largely due to the personal influence of George G. McMurtry, president of the company, whose genius for executive responsibilities was so signally demonstrated in the growth of the Apollo works. He saw that in the arrangement of that plant and of the town surrounding it many improvements were desirable for the betterment of the men employed, as well as for better results to the company. In studying this subject he visited many of the famous workingmen's towns in Europe, became thoroughly familiar with what had been done for workingmen, both abroad and in this country, and in time decided upon the methods which ought to be adopted in an American workingmen's town. They could not well be put in force at the old location, but could be at a new one. It was his desire to make his employees as comfortable and as happy as possible, and therefore he gave his personal supervision to the details. They realize this deep interest in their welfare and show their appreciation at every opportunity.

Coating Iron with Lead.

A new process for applying a coating of lead enamel to iron surfaces, recently invented by M. A. Dormody, is thus described in *La Nature*: The articles to be coated, after being heated to redness, are placed in a double hermetically sealed chamber with glazed sides; each half of the chamber can be worked alternately, and the surplus enamel powder, dusted over the metal by means of a sieve, is removed from the chamber by the draft from a high chimney. The necessary movements of the iron can be effected from the outside of the chamber, and the vibration of the sieves for the purpose of distributing the lead powder is provided for by an electrical beater.

THE UNIVERSAL SANITARY CUSPIDOR COMPANY, Worcester, Mass., are distributing circulars showing their Cuspidor and the method of using it. The article consists of a bowl having a cast iron flange designed to be set flush with the floor of public buildings. The main opening is protected by a central cast iron grating. The Cuspidor is provided with a trap beneath, so that it may connect with the plumbing system of a building, and is arranged for a water connection for thoroughly flushing the bowl. By this means, it is pointed out, greater cleanliness can be effected in hotel lobbies, stations, waiting rooms and large office buildings, where a number of people congregate. Setting flush with the floor it is claimed that, as it offers no obstruction, it cannot be upset and its contents spilled, and also that when the floor is mopped or washed the Cuspidor is flushed, so that greater cleanliness attends its use.

Situation in the Plumbing Trade.

The strained relations existing in the plumbing trade have called out a number of communications expressing various views in regard to the matter, to which we shall have occasion to refer in later issues. We take pleasure in laying before our readers at this time the letters given below, which are from men whose position in the trade entitles them to be regarded as thoroughly representative of the interests of the plumbers, whose action they defend as reasonable and necessary:

THE PLUMBERS' VIEW OF THE SITUATION.

To the Editor: I cannot agree with your editorial any more than I can with the Chicago Resolutions. You certainly are not well informed on the situation from our standpoint or your editorial would have taken a different tone. It is not true that the New York Conference Resolutions were granted the master plumbers to satisfy their demands, nor is it true that many of the manufacturers thought that they were granting us too much in adopting them. On the contrary, both we and the manufacturers realized at the time that we were giving them the large end of the deal. We did not ask them to pass them, but, on the contrary, they emanated from the manufacturers and we were asked to adopt them. We did this and realized at the time that we were giving them everything that they asked for, but at the same time we wanted for once to place the entire responsibility on their shoulders, and if they failed to carry out their part of the agreement it would be their fault and not ours. They were highly gratified when we passed the New York Conference Resolutions, for they really never expected that we would be willing to accede to anything so liberal to them. We faithfully lived up to our part of that agreement, and often at a sacrifice to ourselves, and they have never accused us of breaking our part of same. But they utterly failed to live up to their part of same, and did not even make a pretense of trying to do so. Had they carried out the provisions of the agreement, even to the extent of 75 per cent. of it, that agreement would be in existence to-day. But as they continually broke faith with us and would not enforce the penalties on their own members, even when the penalty was assessed by their own committee without a dissenting voice, we could only preserve our self respect by withdrawing from same. It was dead from their non-enforcement long before our committee met in Cleveland. Would you try to live up to a mutual agreement when the other side made no pretense of doing so? And, after all, we are only asking them to do what is only right and just. We ask of them that they shall not sell goods at both wholesale and retail—that they shall not sell us our supplies and then be our competitors also. We reserve the right to buy only from those whom we please, and we please to buy only from those who will confine their sales to legitimate channels.

REASONS FOR ADOPTING THE CLEVELAND RESOLUTIONS.

To the Editor: The New York and Cleveland Resolutions and your comments thereon have been carefully noted. The heading of your article refers to the radical stand taken by the National Executive Committee of Master Plumbers, but in my opinion the National Executive Committee of Master Plumbers were forced to take the position they did, in justice to their members. They had the right, and it seems to me they are perfectly justified in abrogating the New York Conference Resolutions. There was nothing else to do, after one of the contracting parties failed to act for over a year on several admitted violations of the joint resolutions on the part of their members.

I interpret the Cleveland Resolutions identical with the Baltimore, New York and Chicago Resolutions, with one exception, and that is, there are no provisions for arbitration jointly or for joint action in cases of disputes and infractions, a feature which seems to have been thoroughly and conscientiously tried with unfavorable results.

I fully believe that by conservative, prompt, business-

like and loyal measures under the Cleveland Resolutions proper trade protection can be secured by the manufacturers, jobbers and master plumbers in general.

Being one of the many who strenuously assisted in the adoption of the New York Conference Resolutions, especially on account of the mutual agreement of instituting a conciliatory committee, I very much regret, and in this coincide with all other local associations of master plumbers throughout our State and country, and especially the National Executive Committee of master plumbers, that a satisfactory result, under the circumstances, could not be obtained by such resolutions.

DUST CAUSES IMPURE AIR.

The influence of the dust deposited upon radiating surfaces on the purity of the air passing over them has not generally received the consideration which the final effect should secure for it. This has often led to the disparagement of some heating apparatus which a better knowledge of the cause would have avoided. The light thrown on the subject by the investigations of a German engineer should be of advantage to all who are engaged in heating with warm air. The results of his careful investigations are presented as follows:

It is well known that when a chamber system* of heating is started in the fall a bad odor is noticeable in the heated rooms, whether the surfaces have a temperature higher than 212 degrees or not. Many guesses have been made as to the cause of this. The reason most frequently offered was that the air was burned or dry distilled. But this answer must be rejected, for the reason that dry distillation can only take place at temperatures about three times as high as those attained in modern low pressure steam or hot water heating.

It remained for a German professor to look into the matter in the usually thorough German fashion. He made extensive investigations and tests of the dust gathered from the radiators in city residences and school rooms, and has evidently solved the problem. This investigation showed that the very fine carefully gathered dust is composed principally of horse manure, the presence of which is easily explained. This manure is ground into fine dust by the traffic and carried by the moving air and the shoes and clothes into the heating chambers and rooms, and naturally settles on the radiating surfaces.

It was further discovered that the dust taken from cold radiating surfaces had a large percentage of moisture, which is also easily explained. In view of the fact that this dust is composed largely of organic matter, and being highly hygroscopic, it is enabled to absorb large quantities of moisture. Last, but not least, the dust was found filled with micro-organisms. When these dust covered surfaces are slowly heated the moist manure, owing to the micro-organisms, will give off ammonia, which, on the one hand, gives to the air an unpleasant odor, and, on the other hand, has a bad effect on the mucous membranes of the people in the room. This would account for the belief that dry distillation of the air takes place, as the effect is quite the same. After a longer period of heating the moisture contained in the dust is withdrawn and the micro-organisms die. The evaporation of ammonia ceases, and with it the disagreeable effects noted above.

To avoid these altogether it is necessary to provide all heating surfaces with means for being properly cleaned and freed from dust before the beginning of any period of heating. It is further recommended to use only such radiation as is easily kept clean. Pin indirect or other extended surface radiation, and such sectional cast iron radiators as have the sections closely shoved together to save space, should be looked upon as unsanitary.

THE FOWLER RADIATOR COMPANY have secured land from the Lorain Steel Company for their plant at Johnstown, Pa. Portions of the old plant may be used.

* By chamber system the writer means a warm air furnace, or indirect steam or hot water heating system in which the radiation is inclosed in a chamber and has outside cold air duct.

HEATING SHIPS FROM SHORE PLANTS.

It has long been the custom of railroad companies to heat cars that are standing on a siding previous to their being run into the station to form trains for carrying people from a special steam plant operated for this purpose. A steam main, suitably insulated for protection against the loss of heat, is run along a track in the car yards, having outlets at places convenient for attaching steam hose connected with the car heaters. This has added greatly to the comfort of those who travel, and has also served as a protection to the cars themselves. It is now proposed by the steam engineering department of the Brooklyn Navy Yard to utilize a steam heating plant for heating ships which are undergoing repairs at the yard. Heretofore, when the boilers of ships were not in use it was impossible to heat them except by the use of stoves. This method involved discomfort and risk from fire. It is now intended to erect a suitable steam plant from which steam will be taken through mains in the yard, and from them by means of steam hose to radiators or coils in the vessels to be heated. It is expected that by this means a comfortable temperature can be maintained in the ship, so that workmen can more speedily make the needed repairs and a considerable saving may thus be affected. Heating by this process will also be cheaper and less laborious than when the boiler plants in the ships themselves are fired for the purpose.

THE CAST IRON SOIL PIPE SITUATION.

A meeting of the manufacturers of cast iron soil pipe and fittings was held last week at the Arena in New York City. The meeting lasted for two days, Thursday and Friday, November 21 and 22. Representatives were present of all the manufacturers in the United States, and reports were read by the permanent secretary to the manufacturers, Frank J. Mulcahy, which showed that the business during the fiscal year ending November 1, 1901, was profitable to the trade. In fact, it has been the most satisfactory year's business ever experienced in the history of the soil pipe and fittings industry. We learn that there was considerable discussion regarding a change in prices; some of the delegates being desirous of adopting a new scale of prices, which would be slightly higher than those now in effect. The majority of those present were of the opinion, however, that it would be impolitic and unwise to make any change at the present time, and that it would be to the best interest of all concerned in the manufacture and sale of this class of goods to maintain the present prices until the spring trade opens up. If the outlook warrants any change, it may be made at that time. Judging from present indications it is not improbable that there will be no change in prices either in the early spring or at any time before August or September of next year.

In November, 1900, the manufacturers of soil pipe and fittings entered into an agreement with each other whereby prices were to be maintained at a profitable and stable level. Rules and regulations regarding sales, shipments, freight allowances and territory were adopted, and allotments were made to the various foundries represented in the pool by which the producing capacity of each foundry was kept within a certain tonnage for one year, ending November, 1901. In no instance, however, was a prohibitive allotment made, the tonnage allowed each plant being much in excess of its apparent sales or demands.

The manufacturers were so well pleased with the manner in which the business of the association was handled that they have again signed similar articles of agreement, and will maintain prices and the same rules and regulations for another year from the date of signing the agreement. This news will be reassuring to the jobbing trade and also to those large contracting plumbers who, through the demands of their business operations, are compelled to carry large stocks of cast iron soil pipe and fittings at all times. The agreement between the manufacturers indicates that prices are likely to be kept on a steady basis, and that the market for

these goods will undergo no radical fluctuations in price for some time to come.

New York City Notes.

The question of working for general contractors on municipal work is one that has been brought prominently before the Master Plumbers' Association. Several city departments have made plumbing a separate contract, but some departments which have contracts to give out before the end of the year seem to have included plumbing in the general work. It is to be hoped that the plumbers have the means to prevent their work from being so included.

* * *

Morris Sandzik of 802 Second avenue, an unlicensed plumber, was held for trial in \$500 bail by Magistrate Mott on November 27 for doing plumbing work at 581 Third avenue. The association is making a determined effort to put these people out of business, unless they obtain certificates of competency, which most of them are unable to do. A number of other similar cases are under advisement.

* * *

The strike on the "Ansonia," the Stokes hotel, continues, owing to the difficulties between the two organizations of journeymen plumbers. Many efforts have been made to settle these differences, the latest being a new organization of the building trades, which claims to represent 65,000 men. They will form a new central body, leaving out all the warring factions in all trades.

* * *

C. D. McClure of 144th street and Willis avenue is a strenuous applicant for chief inspector of plumbing in the Bronx Building Department. He is endorsed by many prominent plumbers, but does not belong to the association. Numerous applicants are looking for the chief inspectorship in the other boroughs, and as the appointing power is as yet unknown, it is hoped that an organization man will succeed in getting the position.

* * *

Trade is about wound up on regular work. The supply trade are only filling the balance of orders, with the exception of the new jobs previously mentioned. All, however, are busy and looking for more work after January 1, when the new Tenement House law compels changes to be made in existing tenements.

* * *

Manhattan branch are making elaborate preparations for their entertainment and reception to be held on December 18, and expect one of the best affairs they have ever held.

Hot Water System Exhaust Heating.

Evans, Almlral & Co., 44 Dey street, New York, have prepared a catalogue dealing with their system of exhaust hot water heating. In this method hot water is used as the heating medium, being circulated through a system of mains similar in construction to those used in ordinary steam heating. In order to accelerate the natural circulation due to the difference in density of the water in the supply and return mains there is introduced in the circuit a small centrifugal pump driven either by belt, direct connected engine or motor. This insures a positive, rapid and perfectly controllable circulation in all parts of the system. Exhaust steam is used for heating the water, the method being such that there is absolutely no back pressure on the engines. The action is quite like that of a condenser, to which indeed the heater is similar in design. The water circulates in a space around the tubes, where it absorbs the heat of the exhaust steam, thereby condensing it. The condensed steam can afterward be either collected and returned to the boiler, or it can be allowed to go to waste. This exhaust heater can be placed so that it will utilize the exhaust steam from a condensing engine. This company have just received the contract for heating the large new shops of the Allis-Chalmers Works at Milwaukee.

The P. and S. S. League.

On Monday night the team of E. F. Keating succumbed to the teams of the Crane Company and the Ronalds & Johnson Company, Brooklyn, these two teams each winning and losing a game. The feature of the evening was the close contest in the last game, when the Ronalds & Johnson Company team scored 723 and beat the Crane Company team's score of 721. No games were on the schedule for Thanksgiving evening. The standing of the teams at the close of the second month of the tournament is as follows:

The Standing of the Teams for November.

Teams.	Won.	Lost.	Team Individual		Name.
			score.	score.	
John Simmons Company..	6	0	730	196	W. A. Presby.
Behrer & Co.....	5	1	827	198	M. Behrer.
F. N. Du Bols & Co.....	6	2	776	202	C. W. Frean.
Crane Company.....	4	2	727	210	A. E. Good.
Ronalds & Johnson Company, Brooklyn.....	4	2	827	195	R. V. Speres.
Salesmen	3	3	742	222	Henry Stein.
Ronalds & Johnson Company, New York.....	3	3	702	189	W. S. Gibbs.
Central Foundry Company..	3	3	701	199	J. S. Dibley.
C. S. Locke & Smith.....	3	3	693	193	C. A. Blanchard.
H. P. Read Lead Works..	3	3	689	196	C. V. Driggs.
Dimock & Fink Company..	2	4	684	167	A. B. Beith.
John A. Murray.....	2	4	676	189	G. W. Tilton.
Thomas G. Knight.....	2	4	675	160	E. E. Benas.
F. Ade & Co.....	1	7	695	166	C. E. Lowe.
E. F. Keating.....	0	6	601	185	C. J. McCarthy.

Heating and Plumbing Notes.

THE L. H. TOUCEY COMPANY, Waterbury, Conn., are installing new Furnaces in the Methodist parsonage in that city and in the store of I. A. Spencer. They are also putting a new plumbing system into the residence of Mrs. I. L. Munson.

THE annual entertainment of the Manhattan branch of the Association of Master Plumbers of New York City will be given in the Lexington Opera House on Wednesday evening, December 18, under the auspices of the following Entertainment Committee: Milton Schnaier, B. F. Donohoe, T. J. McCormack, E. J. Brady, T. J. Cummins and John Boyd. *The Metal Worker* acknowledges the courtesy of complimentary tickets with an invitation to participate in the event.

THE JENNISON PLUMBING COMPANY of Fitchburg, Mass., have purchased the stock and business of F. N. Smith at Ayer. They have also purchased the building owned by Mr. Smith, in which they will conduct a branch of their plumbing business under the management of Mr. Smith.

THE KELLOGG-MACKAY-CAMERON COMPANY, 110 Lake street, Chicago, Ill., are sending to the trade a small hanger, showing the Little Giant, Improved Giant and Tropic Junior Water Heaters, designed for use in connection with hot water storage tanks, having capacity for supplying from 80 to 1300 gallons of water per hour. The hanger also shows a broken view of the company's Hot Water Storage Tanks, which can be furnished with or without steam coils. When furnished with steam coils they can be heated from the boilers in apartment houses during the time of year when these boilers are run or by means of a water heater during the summer season. These Storage Tanks are made in a variety of sizes, having capacity from 66 to 1000 gallons. The hanger also calls attention to an especially strong stand suited for vertical tanks and made in five sizes, from 18 to 36 inches in diameter.

THE authorities of Beverly, Mass., have passed a new plumbing ordinance.

ATTORNEY-GENERAL BELL of Texas objects to the statement that he agreed to the dismissal of the anti-trust suit against the Master Plumbers' Association of that State, but desires it stated that the plumbers will confess judgment for an agreed upon amount. Mr. Bell is also reported to have stated that the compromise will provide for the disorganization of the Plumbers' Association and the payment of a judgment satisfactory to the

Attorney-General. The amount has not yet been determined, but it is supposed that it will be small.

As a result of the violation of the plumbing regulations of Pittsburgh suit has been brought against a plumbing house in order to test the constitutionality of the plumbing laws in the courts.

F. E. BEHNER, Hartford, Conn., has the contract for installing hot air furnace heating systems in several houses that are being erected by T. P. Moulton and also in several houses for George M. Merrow.

Bids are being received by L. H. Focht of Reading, Pa., for the plumbing work in the Colonial Trust Building to be erected there, and also for the Philadelphia & Reading Railway Company's office building in the same city.

LEIGHTON & DAVENPORT of Bangor, Maine, have been awarded the contract for heating and ventilating the new Penobscot County Court House at their bid of \$5700.

THE CHARLOTTE PIPE & FOUNDRY COMPANY of Charlotte, N. C., have begun the erection of their new plant. The main building will be 100 x 100 feet and the machine shop 30 x 50 feet. Equipment for a daily production of 10 tons will be installed. J. J. Beggs is manager of the plant.

THE master plumbers of Davenport, Iowa, held a meeting recently to arrange for entertaining the State convention of the Iowa Masters Plumbers' Association, which is to be held in their city in February.

WORK is progressing on the addition to the foundry of the Iron City Sanitary Mfg. Company, Zella, Pa. The addition, 150 x 100 feet, is under roof and will be ready for operation by the first of the year, increasing the present capacity by 100 per cent. The foundations for a one-story warehouse, 80 x 100 feet, are completed and work on the structure will be started at once.

THE MONITOR STEAM GENERATING COMPANY, Philadelphia, Pa., have taken out city permits for the installation of steam heating plants at 815, 817 and 819 Girard avenue, in that city.

PHELPS BROTHERS, 284 Pearl street, New York, are making a specialty of the B. & A. Combination Union Elbow and the B. & A. Valves made by Blake & Andros of Boston, Mass. This firm handle a complete line of Steam and Hot Water Boilers, Pipe Covering and many Steam Specialties.

J. B. CARROLL, 36 La Salle street, Chicago, Ill., has issued a mailing card, one end of which is occupied by a picture that will receive more than passing notice. Under the picture are the words "A Head." This is followed by the statement that the Hahn Acetylene Gas Burner is far and away ahead in the production of light. The card also invites a trial of this Burner to ascertain its points of excellence.

THE MOLINE HEATING & CONSTRUCTION COMPANY, Moline, Ill., have completed a \$14,999 contract for laying a new main from the water works into the Stewartville section of the city.

W. G. SCHUWIRTH, San Antonio, Texas, bid \$14,435 for doing the plumbing in the houses and barrack of the Upper Post, and it is probable that he will secure the contract.

TAKING their cue from the recent events leading up to the settlement of the troubles in plumbing circles the master plumbers of Minneapolis, Minn., on November 18 voted to disband their association. The money in the treasury was divided among the members. According to the *Minneapolis Journal*, "This is said to be the end of all efforts on the part of the plumbers to get together on a scheme to throttle competition in the trade."

JACOB L. LAWRENCE of the firm of J. L. Lawrence & Sons, Sussex, N. J., died on November 22, aged 81 years. He had been engaged in the Hardware and plumbing business at Newton and Deckertown, N. J., for many years.

JAMES A. COOPER, formerly at the Youngstown Works of the National Tube Company, at Youngstown, Ohio, has resigned to take charge of the Tube mill of the Youngstown Iron, Sheet & Tube Company, now building

at Youngstown. James A. Hock of the Chester Works of the National Tube Company succeeds Mr. Cooper at Youngstown.

ATLAS PIPE WRENCH COMPANY, 121 Liberty street, New York, advise us that the sales of their Pipe Wrenches show a fine increase during the past few months, which, they state, is doubtless chiefly due to their exhibit at the Pan-American Exposition, in which a practical demonstration was given of the workings of the Wrench. They report that one of the jobbing houses in the Middle States has placed four orders for quantities of the Wrench in the past 40 days, a new stock order every ten days.

COL. WILLIAM P. TYLER, president of the Tyler Tube & Pipe Company of Washington, Pa., has returned from a six months' visit to Europe, greatly improved in health.

JAMES R. SMITH & Co. of Mechanicsville, N. Y., have removed their plumbing, steam and gas fitting business from Francis street to a store in the new Moore Block on Park avenue.

CHARLES S. HIRSCHFELD, who for the past two years has been manager of the Plumbers' Brass Goods department of Landers, Frary & Clark of New Britain, Conn., with headquarters at 82 Chambers street, New York, has tendered his resignation, to take effect on January 1. Until that date Mr. Hirschfeld will be at his post ready to do business for the firm. Mr. Hirschfeld, during the time that he has had charge of this branch of the company's business, has earned the esteem of the trade, for which he had previously laid foundations during his occupancy of the managership of the Plumbers' Supply department of the John Simmons Company of New York.

WILLIAM A. FOSKETT died at his residence at New Haven, Conn., on Thursday afternoon, aged 84 years. He was well known to the plumbing and heating trade from his long connection with it and his interest in the Foscett & Bishop Company.

New Firms and Changes.

THE STANDARD LIGHT COMPANY of Wilmington, Del., have been incorporated, with a capital of \$500,000, for the purpose of manufacturing Incandescent and other Burners.

THE GEORGE D. FITZSIMMONS PLUMBING & HEATING COMPANY have been incorporated in St. Louis, Mo., with a capital of \$10,000, the shares being valued at \$100 each. Ninety-eight of the shares are held by George D. Fitzsimmons and one share each by A. F. Fitzsimmons and F. Bauer.

F. JOHN McCASKER, who has been Inspector of Plumbing at Montgomery, Ala., for a number of years, has resigned his position and will open a plumbing and steam and gas fitting establishment at 14 South Ferry street in that city.

THE ANCHOR SANITARY COMPANY is the name of a new concern in the Plumbing Supply business at Pittsburgh, Pa. O. C. G. Brettell is the president; T. J. Duncan, vice-president; J. B. Lantz, secretary; H. L. Andrews, treasurer, and John F. Bailey, manager. The new company expect to be ready for business the first of the year. They have all been connected with plumbing supply houses and are thoroughly familiar with the business, Mr. Andrews having acted as purchasing agent for a large concern for a number of years.

E. I. P. STEADE has sold to W. Funk an interest in the Mankato Plumbing & Heating Company at Mankato, Minn.

THE CURTIS SHEET STEEL & CORRUGATING COMPANY, Zanesville, Ohio, manufacturers of Black and Galvanized Sheets and Painted Corrugated Roofing, rolled their first Sheets on October 24, and advise us they have been running two hot mills ever since, without a single break. They are also rolling their own Bars, the Bar mill having been started October 17, and this also has run very satisfactorily, nothing so far having been broken. They are shipping about a carload of Sheets per day and have a good many orders on their books.

AMERICAN EXHIBITION IN ENGLAND.

United States Consul-General Osborne of London has sent to the State Department the prospectus of the American Exhibition, which is to be held at the Crystal Palace, Sydenham, from May to September, 1902. The Consul-General states that the exhibition is well backed, and has an Influential American Advisory Committee. The Crystal Palace, in which the first international exposition was held fifty years ago, is a very large building, and is particularly well adapted to such a purpose. The buildings cover about 16 acres, are all perfectly lighted, heated and ventilated, and are surrounded by the most beautiful ornamental grounds in Europe, extending over 200 acres. Practically the whole of the interior of the palace will be devoted to the exhibition, which it is expected will prove of benefit, commercially and socially, to both the United States and Great Britain.

In connection with the exhibition it is proposed to establish, under the direction of a committee of representative Americans and British firms, a Commercial Bureau, so that all necessary information may be supplied to exhibitors in regard to the channels of trade and the placing of goods upon British and Continental markets. For the convenience of exhibitors, arrangements will be made with a well-known firm for the supply of stands or cases for exhibits, either to order or to hire at moderate rates. Exhibitors, however, will be at liberty to make their own arrangements in this respect. The American Exhibition of 1902, which is the official title of the proposed undertaking, is designed, according to the prospectus, to demonstrate the immense commercial development which has taken place in the United States during recent years, and it will be the largest and most important exhibition of American products, arts, industries and inventions yet seen in the United Kingdom. The various departments of exhibits, as classified, include in Class 1, machinery and all matters pertaining to the mechanical industry. Class 6 embraces hygiene, lighting, heating, ventilating and sanitary appliances.

The rules governing the exhibition, with form of application and plans of the Crystal Palace, have been filed for reference in the Bureau of Foreign Commerce at Washington, D. C., and plans and particulars of space, charges for which range from about \$1 to \$5 per square foot, according to position, will be forwarded on application to the Assistant Commissioner for Commercial Section, 20 Victoria street, London, S. W., or to the General Manager, Crystal Palace, London, S. E.

Rust Removers.

The following rust removers are recommended in the directions issued to the United States Artillery:

Cyanide of potash is most excellent for removing rust and should be made much use of. Instruments of polished steel may be cleaned as follows: First, soak, if possible, in a solution of cyanide of potassium in the proportion of 1 ounce of cyanide to 4 ounces of water. Allow this to act until all loose rust is removed, and then polish with cyanide soap. The cyanide soap referred to is made as follows: Potassium cyanide, precipitated chalk, white castile soap. Make a saturated solution of the cyanide and add chalk sufficient to make a creamy paste. Add the soap, cut in fine shavings, and thoroughly incorporate in a mortar. When the mixture is stiff cease to add soap. It may be well to state that potassium cyanide is a violent poison.

For removing rust from iron the following is given: Iron may be quickly and easily cleaned by dipping in or washing with nitric acid 1 part, muriatic acid 1 part and water 12 parts. After using wash with clean water.

An estimate prepared by a Philadelphia banking house shows that there remains in the anthracite fields of Pennsylvania 5,073,775,000 tons of unmined coal. Almost the whole of this coal is owned by the eight railroad companies that operate in the anthracite territory. It is estimated that 50,000,000 tons of anthracite coal will be mined and marketed this year.

CHIMNEY TOPS AND VENTILATORS.

The first chimney made by man did so much for his comfort in removing the smoke and gases and other products of combustion from his habitation that the chimney ever since has been an important feature of all buildings. The early smoke ducts had some features which are essential in all chimneys, even at this point of progress in the inventions of mankind. These features embraced the provision of a flue practically straight from top to bottom, and of a rectangular shape, which seldom departed from an absolute square. As the use of houses became more general, and in localities where they were grouped closely together, some liberties, however, were taken with the size and shape of the chimney. In some cases a step backward to the habitation of the aborigines, in which the smoke got out of the domicile through the same opening by which the owner entered, seems to have been taken and smoky chimneys were a frequent subject of complaint. This led to the study of the top of the chimney, when it was found that the shape of the top had not a little to do with the rapidity of the up current within the chimney, commonly characterized as draft. Where some buildings in a group were higher than others it was found necessary to arrange the top of the lower chimneys so as to be proof against back drafts and to aid the escape from them of the rising products of combustion.

Those who ride through large cities cannot fail to notice that mankind has been making strenuous efforts to help the chimney. The chimney top, or ventilator, is made in a variety of styles, and the chimney expert is frequently called upon to exercise his art in this field. David J. Rosen, 439 Canal street, New York, who has made a study of the chimney problem for a number of years, has invented and is manufacturing the Russo side draft ventilator, which, he claims, meets all requirements. This ventilator has been attached with satisfactory effect to the top of a short chimney in the middle of a low, narrow building standing between two very high buildings, so that when a high wind causes a strong current to rush across the roof of the low building it creates an exhaust in the chimney instead of having a baffling effect upon the heating apparatus to which it is attached. Low chimneys naturally do not have the strength of draft of higher chimneys, and chimneys in the surroundings described frequently fail in operation. The Russo chimney cap or side draft ventilator is designed to utilize the force of these air currents to effect an exhaust from the chimney, so as to draw away from the fire the gas and smoke produced by combustion. This ventilator also utilizes the heated air rising along the outside of the chimney top for effecting an exhaust draft from the chimney, even when there is an absolute stillness of the air, when many constructions for the relief of chimneys prove a hindrance to the draft.

Those who sell stoves, either for heating or cooking, hot air furnaces or steam and hot water heaters are subject to more or less complaint when the results from the apparatus are less satisfactory than expected. In many instances the cause of the trouble is with the chimney, and a study of the operation of chimneys and the methods of applying a remedy when trouble is reported is important. In such cases points can often be secured by following the course which has been pursued successfully by others. A short ride on any one of the elevated roads of New York City will convince the most skeptical that a "long felt want" has been supplied by the chimney cap or ventilator.

A remarkable project is now receiving the attention of Russian engineers. It is proposed to construct a tunnel under the main chain of the Caucasus Mountains from a point 40 miles south of Vladikavaz. The tunnel will be 23 miles long, and its estimated cost is \$75,000,000. It is believed that the scheme, which has the warm support of the Czar, will be taken in hand as soon as the Trans-Siberian Railway is finished. The work will be of vast importance, as it will afford direct communication between Southern Russia and Trans-Caucasia.

FAMINE IN SPOT TIN.

Of all metals tin is the most erratic in movement, subject to violent speculation, sudden, sharp and wide fluctuations of prices, periodical corners and what not. At times trading is attended by great excitement, at others the mood of the market is as gentle as a lamb. Taken all in all, tin—pig tin—affords as many opportunities for profit and loss as the stock market, and as many elements of chance enter into its barter as bewilder the guests of Monte Carlo.

The relative scarcity of tin and its mining in widely separated districts throughout the world make possible peculiar and dramatic situations. But with all the provoking eccentricities the nurries in tin are of an ephemeral nature—too intense to last long.

It is only within very recent years that this country has been directly and intimately connected with the rise and fall of tin, although always indirectly interested. But with the growth of the tin plate industry the market for pig tin has become a matter of the greatest importance and solicitude to domestic dealers and consumers.

Recent statistics reveal the rapid, large and important increase in the domestic manufacture of tin andterne plates. In 1900 about 302,000 tons were produced, against 18,000 tons in 1892, while imports decreased from about 330,000 tons, valued at \$24,000,000, in 1890, to 60,000 tons, worth less than \$5,000,000, in 1900.

In the present state of unprecedented activity in iron and the active demand experienced for its close relations, such as steel and tin plate, a corner in pig tin is of more than usual interest.

Ordinarily it is London that sets the other markets of the world ablaze, and not infrequently Singapore offers a surprise, but at present New York is feeling the effects of a famine in spot tin in which the other tin markets, consumptive and productive, are but little interested, the conditions prevailing being entirely of a local character.

From November 1 to 24 the arrivals of pig tin at the port of New York were scarcely sufficient to meet the consumptive requirements for one week. But two weeks ago it became evident that the spot supply was short and the light stocks were found concentrated in the hands of one firm, who have cornered the local market on several previous occasions.

The delay of steamers laden with tin has aggravated the situation and added to the distress of dealers dependent upon the stock in transit to make November deliveries. Naturally there has been an heroic effort made by consumers to remain out of the market, all sorts of expedients being resorted to. But wants became so pressing, and efforts to borrow or beg unavailing, that on Monday some consumers were forced to purchase supplies at prices 5 cents per pound higher than were current on November 8.

The arrival of the steamer "Jupiter" on Saturday last gave some slight relief to the hungry market, and there is now afloat from Singapore, Penang, Rotterdam and Southampton over 3000 tons. The steamers in transit, with the exception of two, should have arrived at Atlantic ports on various dates prior to November 24; the other two are due on December 2 and 7.

Seldom, if ever, has the New York market had conditions like the present to contend against, but while the situation is unusual and the solicitude of consumers acute, with a further advance in prices probable before substantial relief comes, the days of the corner are numbered by a few. Still, even with a more ample supply, the urgent demand for immediate delivery may hold the spot market strong, however unsettled it may become for future delivery.

HUTCHINSON LUMBER & SUPPLY COMPANY, Valdosta, Ga., wholesale Hardware, Lumber, Machinery, &c., advise us that they would be pleased to receive catalogues and price-lists relating to Hardware, Tinware and Mill Supplies.

TRADE NOTES.

WILLIAM A. BROWN, for many years treasurer of the Jos. Dixon Crucible Company of Jersey City, N. J., and formerly a member of the Board of Public Works in that city, died at Asbury Park, N. J., on November 22, after a long illness, aged 66 years.

THE SELF SEALING CAN COMPANY, with office at 15 Exchange place, Jersey City, N. J., have been incorporated, with a capital stock of \$5000, by Lemuel A. Welles, Alfred J. Curtiss, Harold Walker, Nathan Smyth and John J. Treacy, to manufacture Cans, &c.

THE ST. LOUIS SUNLIGHT COMPANY of Arkadelphia, Ark., have been incorporated by C. E. Neely, R. G. Speer, John R. Boddie and George H. Loeke, with a capital of \$5000, to sell machines for the generation of illuminating gas.

THE PRESSED METAL & NOVELTY MFG. COMPANY have been incorporated at Baltimore, Md., with a capital stock of \$5000, for the manufacture of Pressed Metal Novelties. Frank Ruckle, Adolph Meyer, George A. Macauley and others are interested.

THE LUDLOW TIN TAG WORKS of Ludlow, Ky., have combined with similar plants at Chicago, Ill., and Durham, N. C., and the three plants will be consolidated at Ludlow, employing 300 men.

THE SCOVILL MFG. COMPANY, Waterbury, Conn., manufacturers of Brass and German Silver Sheets, Rods, &c., have already installed eight stands of 20-inch rolls in their new rolling mill, which was put in operation in September, and there are emplacements provided for four stands of 16-inch rolls which they expect to have in operation by February. Most of the work was built by the Bethlehem Steel Company and the engine was furnished by the Southwark Foundry & Machine Company of Philadelphia. The company at the present time are enlarging their Wire mill.

POWERS BROS., Henry, Ill., report constantly increasing sales of their Powers Automatic Chimney Tops and Iron Mountings, on which they advise us that they have an established trade in Canada and all over this country.

THE PITTSBURGH LAMP, BRASS & GLASS COMPANY have been incorporated under New Jersey laws, with a capital of \$1,500,000, to manufacture and deal in Lamps and Glassware of all kinds. The incorporators are James H. Willock, Frank G. Wallace, George W. Blair, George B. Barrett, Nicholas K. Opp, Wm. Curray, David W. McMaugher and Edward A. Fitzmiller, all of Camden, N. J.

SARGENT & Co., New Haven, Conn., and 149-153 Leonard street, New York, in a 16-page 13½ x 8½ inch folder in legal document form, just issued, describe the "What, Why and How" of Sargent's Gem Food Chopper. The first portion illustrates and describes the Chopper in its various details. Then follows a series of 14 prepared advertisements of various kinds and sizes adapted for use in the local newspaper or other medium. Sargent & Co. are ready to furnish these cuts, with the dealer's name and address inserted in space at bottom of advertisement, free of charge on application.

THE W. J. CLARK COMPANY, Salem, Ohio, have just completed the building of a brass foundry. About seven years ago they began the manufacture in a small way of an improved Hose Coupling, now quite extensively known as the Quick as Wink Coupler for fire, lawn and mechanical hose. The almost universal belief that the old style screw coupling could never be excelled made the introduction of the Quick as Wink Coupler a hard task, but it grew in favor with fire departments steadily, though slowly, so that its superiority to the old style coupling is pretty well known. Still, the demand for them was too limited until more recently to justify installing a brass casting department. Therefore the castings for these Couplers were contracted for at Pittsburgh and elsewhere. The discovery about two years ago that Quick as Wink Couplers on air hose were time savers in shops where compressed air is used has increased their sales, so that they have been compelled to establish a brass foundry of their own.

Intersection of Elliptical Pipe and Scalene Cone.

A New York correspondent desires a solution of a problem on which he has been working for some time without success. It is the intersection of an elliptical pipe and a scalene cone, as in Fig. 1, where A B C is the elevation of the scalene cone, and D E F G its plan, taken on the line B C of the elevation, while H I J B shows the outline of the elliptical pipe placed in plan, as shown by K L M F. To obtain the miter line in elevation between the pipe and cone proceed as follows: Divide one-half of the plan F G D into equal spaces, as shown by the small figures 1 to 8, and draw lines to the apex F in plan, intersecting the half plan of the pipe

P R, as shown from 1 to 8 to 1, because the spaces in F K L M in plan are unequal. At right angles to P R and from the small figures draw lines, as shown, which intersect with others (not shown) drawn at right angles to H B in elevation from similar numbered intersections on the miter line B J. Trace a line through points of intersection thus obtained; then will P R S T U be the pattern for the elliptical pipe.

Before obtaining the pattern for the scalene cone it will be necessary to obtain a diagram of triangles from which the pattern is obtained, for which proceed as follows: Let the triangle A B C and the half plan F G D, with the various intersections on same in Fig. 2, be a reproduction of the triangle and half plan having similar letters in Fig. 1. Now, with F as center, Fig. 2, and radii, equal to F 2, F 3, F 4, F 5, &c., to F 7, draw arcs intersecting the line F D at points 2' to 7'. These various

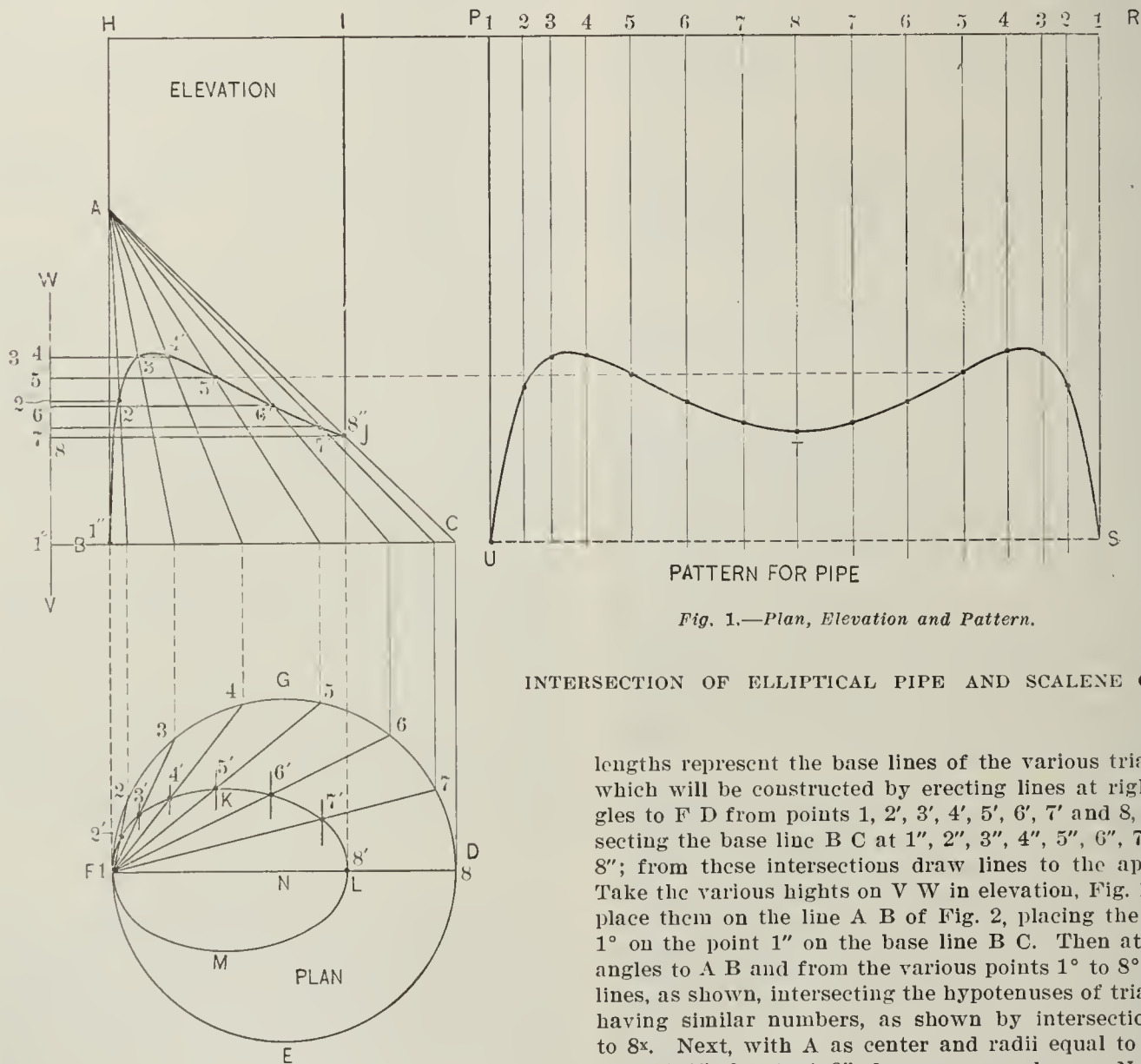


Fig. 1.—Plan, Elevation and Pattern.

INTERSECTION OF ELLIPTICAL PIPE AND SCALENE CONE.

F K L at points 1, 2', 3', 4', 5', 6', 7' and 8'. At right angles to F D and from points 1 to 8 on F G D erect lines intersecting the base line of the cone in elevation, as shown, from which intersections draw lines to the apex A. Next intersect these radial lines in elevation with others (not shown) drawn from the intersections 1, 2', 3', 4', 5', 6', 7' and 8' on F K L in plan at right angles to F D, intersecting similar numbered lines in elevation shown by 1'' to 8''. Trace a line, as shown by B J, through points thus obtained, which will show the miter line or intersection between the scalene cone and elliptical pipe. Parallel to A B draw the line V W, upon which place the various heights of the intersections in the miter line B J from points 1'' to 8'' at right angles to A B, as shown from 1° to 8° on V W. This will be used in the diagram of triangles in Fig. 2.

For the pattern for the elliptical pipe draw any line, as P R, in line with H I, upon which place the stretch-out of the elliptical section F K L M in plan, being careful to carry each space separately onto the line

lengths represent the base lines of the various triangles which will be constructed by erecting lines at right angles to F D from points 1, 2', 3', 4', 5', 6', 7' and 8, intersecting the base line B C at 1'', 2'', 3'', 4'', 5'', 6'', 7'' and 8''; from these intersections draw lines to the apex A. Take the various heights on V W in elevation, Fig. 1, and place them on the line A B of Fig. 2, placing the point 1° on the point 1'' on the base line B C. Then at right angles to A B and from the various points 1° to 8° draw lines, as shown, intersecting the hypotenuses of triangles having similar numbers, as shown by intersections 2x to 8x. Next, with A as center and radii equal to A 1'', A 2'', A 3'', &c., to A 8'', draw arcs, as shown. Now set the dividers equal to the spaces contained in the half plan F G D, and, starting on the arc 1'' at 1, step from one arc to another, or, in other words, starting on the arc 1'' at 1, step to arc 2'', then to 3'', until the point 8 is obtained on arc 8'', which repeat, going backward, until the point 1 on the arc 1'' is obtained. Trace a line, as shown by H I J. Again using A as center and A 2x, 3x, 4x, 5x, 6x, 7x and 8x as radii, intersect radial lines in pattern drawn from the small figures on H I J to the center A, thus obtaining the intersections 2''' to 8''' to 2''' in pattern. Trace a line, as shown by J K L M H, and H I J K L M H will be the pattern for the scalene cone.

A CHARTER has been granted by the Secretary of State of Pennsylvania to the West Carnegie Sheet Steel Company, which concern took the place of the Carnegie Sheet Iron Company, chartered some months ago. A change in the *personnel* of the company caused the directors to apply for another charter under a new name. The directors of the West Carnegie Sheet Steel Com-

pany are: George W. Wilson, former director of the Department of Public Works of Pittsburgh; City Treasurer David H. Torrence, W. H. Skivington, Joseph R. Paull and George M. Chalfant, all of Pittsburgh. The company have secured 11 acres of land in West Carnegie, Pa., on which they will erect a ten-mill plant to cost about \$400,000. The plans for the building are now being prepared, and the company expect to have the plant in operation by the middle of next year.

Tests of New Tin Plate Process.

Regarding the Allis-Andrew tin plate process, with which the American Tin Plate Company are experi-

The packs are reduced to 31-gauge at one heat, in five passes, and without any opening or doubling in the operation. There are other improvements in the Allis-Andrew system which make a still further reduction in the cost of manufacturing tin plate and sheets which at present the American Tin Plate Company have not facilities for testing.

H. Herbert Andrew, J. P., managing director of J. H. Andrew & Co., Limited (Toledo Steel Works), Sheffield, England, was here during the first demonstrations and sailed for Liverpool Saturday last. Mr. Andrew represents the British capitalists interested in the Allis-Andrew system, and will lead a movement to revolutionize the manufacture of tin plate in Wales.

New Sheet Rolling Process.

Albert J. Demmler of Wellsville, Ohio, has just obtained a patent on what may turn out to be an important improvement in rolling sheets. Mr. Demmler's idea, according to the *American Manufacturer*, is to provide means for maintaining a pile of heated sheet or plate metal at approximately the proper temperature for rolling, and prevent such rapid cooling of them as would render the sheets in the lower part of the pile too cool for the operation.

In a patent granted to W. M. Theobald in 1898, a process of bluing sheet iron or steel was set forth, which consisted of exposing the sheets to the atmosphere by turning them over one at a time and forming a pile of sheets by placing one turned over sheet upon the other, then taking the pile to the rolls and passing one or two sheets at a time while their temperature was above 300 degrees F. One difficulty with this practice has been that the sheets in the lower part of the pile were liable to cool during the rolling of the sheets above them so as to be brought below the proper temperature for fixing the oxide on the surface or polishing them.

The object of Mr. Demmler's invention is to provide means for holding a mass or a pile of sheets or plates at the proper temperature, so that the sheets in the lower part of the pile will not lose their heat so rapidly as to be lowered below the proper rolling temperature, the invention being intended for use in warm rolling, either for bluing or polishing, or in the rolling of the sheet or plate metal at higher temperatures, such as at a practically red heat, to reduce the same to thinner gauge.

To these several ends the invention consists, generally stated, in the combination with a set of sheet rolls of a hot bed adapted to support a pile of heated sheets or plates placed in position to feed the same to the rolls, so that when the pile of sheets is placed on the bed it will aid in maintaining the heat of the sheets in the pile as they are fed to the rolls. The invention is employed with any suitable form of sheet rolls mounted in housing, the hot bed being preferably located directly in front of the rolls.

The hot bed is formed of a frame supporting a heated metal slab, on which the pile of sheets rests. This hot metal slab is preferably heated in the furnace with the sheets to be treated, the idea being to carry the sheets on the slabs on which they rest while being heated, either in the furnace or within the annealing box, to the rolls, so that the sheets are not disturbed from the time they are built up upon the slab and inserted in the furnace until they are fed directly to the rolls, the slabs thus forming the support for the sheets in the furnace and the means for carrying them to the rolls and acting at the rolls as a hot bed for maintaining the heat within the pile of sheets as the top sheets are fed one by one to the rolls. Such slabs are preferably made of cast steel plates of sufficient thickness to fully support the sheets in handling and to store the necessary heat to maintain the mass of sheets in the pile at the proper heat for rolling.

The hot bed may be in the form of a suitable portable furnace, carried on rollers and built of brick work within a suitable casing and having extending over the top the slab on which the pile of sheets rests. For heating the bed a series of gas jets may be employed that play upon the slab and maintain it at the proper heat.

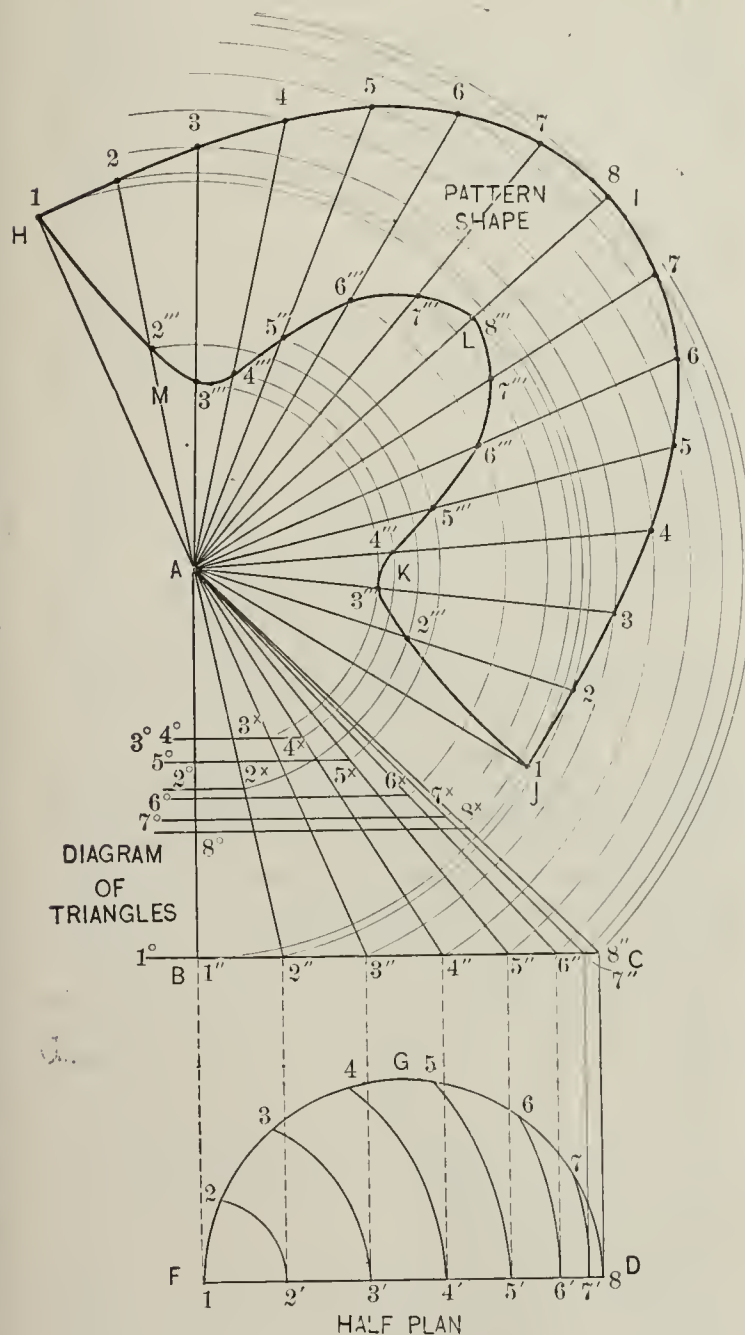


Fig. 2.—Plan, Diagram of Triangles and Pattern. . . .

INTERSECTION OF ELLIPTICAL PIPE AND SCALENE CONE.

menting at their United States works at Demmler, Pa., the Pittsburgh Dispatch of November 24, says:

Thomas V. Allis of Bridgeport, Conn., president of the International Tin Plate Corporation, is here to continue some very successful demonstrations of manufacturing tin plate and sheets by the Allis-Andrew system which are being conducted for the American Tin Plate Company at their United States Works.

The tests of this new system were commenced at the Demmler plant some ten days ago, and were so satisfactory that more extended operations were desired. Thus far all indications point to the justification of Mr. Allis' claims, that with the present heating and rolling capacity of the American Tin Plate Company he can more than double the present output, thereby saving fully \$5 per ton.

Where it is not practicable to use gas a thin coke fire will serve the purpose. The hot bed is made portable, so that it may be adjusted in position for the proper feeding of the sheets to the set of rolls, such position depending upon whether the sheets are to be simply warm rolled, as above referred to, or whether they are to be hot rolled and passed more than once between the rolls, in the latter case the hot bed being removably drawn back from the set of rolls or placed at one side thereof.

Joseph W. Britton.

Joseph W. Britton, for many years prominently identified with the manufacturing interests of Cleveland, Ohio, died in that city on the 22d inst., aged 72 years. The cause of his death was a stroke of paralysis, which occurred several months since. Mr. Britton was born in New Hampshire in February, 1829. He removed to Cleveland in 1853, and was for a number of years with his father, one of the pioneer Western railroad builders. The Brittons built a division of the Atlantic & Great Western broad gauge railroad and a number of other lines. In the late fifties J. W. Britton, with Samuel Mather and others, established the old Cleveland Boiler Plate Mill, one of the earliest plants of its kind in the city. Later he became associated with the Cleveland Rolling Mills in Newburg, being for 11 years manager of the plate and sheet mills. Then, with Ralph Hickox, he bought back the boiler plate mills, of which he had been one of the founders, and operated the plant for a number of years under the name of the Britton Iron & Steel Company. During his early connection with this company he saw the necessity for and invented a machine for leveling sheet iron. For this invention he was awarded a gold medal at the International Inventors' Exposition, held in London in 1885. Mr. Britton continued at the head of this company until 1891, when he sold his interest in the business to John D. Rockefeller. Meanwhile he had made, at the mills that bore his name, the first steel plates for shipbuilding produced on the great lakes. After selling out to Mr. Rockefeller Mr. Britton established the Britton Rolling Mills, near Gordon Park, and at them made the first tin plates produced in Cleveland. When the American Tin Plate Company were formed he sold his mills to them, and since then had given his attention to mining interests in Colorado and Canada. Mr. Britton leaves a widow, five sons and three daughters.

FLASHINGS.

THE GIBRALTAR PAINT & ROOFING COMPANY of Syracuse, N. Y., have been incorporated with a capital of \$30,000 by William D. Bannon, F. K. Smith and Thomas Dougherty of Syracuse.

GEORGE CALLAHAN & Co., 218 Front street, New York, send us a folder showing the different shades in which they can furnish their Silicate of Iron Paint, which, under the name Egyptian, is put up ready mixed in cans of different size for painting buildings. A special feature of the Paint is claimed to be its adaptability for use on Galvanized Iron Cornices, to which it is said to adhere and stand the ravages of time without peeling.

THE bimonthly conference on the Tin Plate wage scale was held in Pittsburgh last week. An examination of the books of the American Tin Plate Company showed that the Tin Plate workers were entitled to no advance in wages.

HARRISON BROTHERS & Co., Philadelphia, Pa., issue a 24-page pamphlet devoted to their Antoxide Paints for coating Iron and Steel surfaces. The catalogue is illustrated with half-tone engravings, showing ships, railroad bridges and water works stand pipes which have been coated with the company's Paints. One page in the catalogue treats of their Antoxide Paint, which is said to adhere firmly to Galvanized Iron, making the best priming for coating this troublesome surface.

It is reported that the officials of the Amalgamated Association of Iron, Steel and Tin Workers are considering a proposition to erect a new building as a headquarters for the association. In case the plan should be

carried through it is considered probable that the headquarters may be removed from Pittsburgh.

THE WILLIAM CONNORS PAINT MFG. COMPANY, Troy, N. Y., makers of the American Seal Paints and Cements, inform us that they make a Paint which is especially adapted for painting Galvanized Iron work. This Paint is put up in packages of different sizes, convenient for the use of Cornice makers and all who have to paint Galvanized Iron. They also make a special Cement suited for Slate, Tile and Metal Roofs.

CHARLES B. BURDETTE will erect a two-story brick Tinware factory, 40 x 100 feet, in Baltimore, Md.

GEORGE D. EVANS, heretofore connected with the American Tin Plate Company's mill at Lisbon, Ohio, has become superintendent of the Carnahan Tin Plate & Sheet Company's new plant, in course of erection at Canton, Ohio. Work is being rapidly pushed upon this plant, and it is stated that three of the mills will probably be ready to begin turning out Tin Plate next week. The other three mills will follow a week or two later. A number of skilled men have been secured from Leechburg, Newcastle and Kensington, Pa.; Lisbon, Ohio, and Elwood, Ind. The unskilled labor will probably be hired in Canton.

It is rumored that the American Can Company purpose doubling the capacity of their Tin Can plant at Fairhaven, Wash., before next season. A number of the officials of the American Can Company have been visiting their properties on the Pacific Coast during the past week or two.

THE MANVILLE COVERING COMPANY, Milwaukee, Wis., have been awarded the contract for Asbestos Roofing Matting for covering all the buildings of the new plant of the Allis-Chalmers Company in that city.

THE GEORGE B. WEAST MFG. COMPANY, Harrisburg, Pa., inform us that the damage done by fire recently at their plant has been fully repaired, and that the plant is now in full operation, with bright prospects of running for an indefinite period, in order to fill the large number of orders on file and those which are coming in. The company manufacture Corrugated Expanding Conductors and Eave Troughs, and make a specialty of Pipe for heating and ventilating, blast, air and blower work.

A. W. BURDICK & Co., Memphis, Tenn., inform us that they have the contract for the Galvanized Iron Cornice, Skylight, and 145 squares of Tin Roofing for St Joseph's Hospital in that city. They are putting the Copper Valleys, Gutters, Galvanized Cornice and Skylights, and 155 squares of Slate Roofing, on St. Mary's Church. The company are also putting a Slate roof and Galvanized Cornice work on the St. Joseph's Orphan Asylum, the Seventh Street Church and the Hunter department store, and are doing similar work on a number of residences in their city. They report that business has been better this year than ever before, with bright prospects for work well into February.

THE Board of Trade of Parkersburg, W. Va., are offering inducements to the Wheeling Roofing & Cornice Company of Wheeling to locate in Parkersburg. The company, who contemplate the erection of an extensive plant in the spring, have also had propositions from New Martinsville, W. Va., and other towns.

THE BROWNE SLATE & METAL COMPANY of Galveston, Texas, who make a specialty of Slate and Tile Roofing, Galvanized Iron Cornices and Skylights, report that they have had an exceptionally good business during the fall.

THE W. DEWEES WOOD COMPANY works of the American Sheet Steel Company, at McKeesport, Pa., were operated on Saturday night, November 23, the first time this has been done for some years. Like all other plants of the American Sheet Steel Company, this works are crowded with orders and were run on Saturday night in order to get out as much material as possible.

THE Tin Plate workers of the Amalgamated Association have voted almost unanimously against the proposition to have the Tin Plate scale hold for three years from July 1, 1901. The officials of the American Tin Plate Company have been notified of the decision, and the Tin Plate scale will therefore terminate on June 30, 1902.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WANTS REMEDY FOR SINGING BALL COCK.

From P. & T., Hightstown, N. J.—Kindly publish in *The Metal Worker* a remedy for a singing valve in a closet tank. This is the supply valve, and operates under a street pressure of 60 pounds.

Note.—We trust our readers will give their experience in overcoming this trouble, which is frequently reported. In the meantime we would state that inquiry has disclosed the fact that the singing is more frequently reported in connection with top supply valves, and that the trouble is seldom reported with supply valves that are located in the bottom of the closet tank. The trouble is primarily due to the vibration caused by the flow of water through the valve as the opening becomes reduced, and the ball cock gets unsteady in its movement, owing to the decreasing and intermittent flow. The noise resulting therefrom is deadened when the valve is in the bottom of the tank, with several inches of water above it. When a top supply valve is used there is nothing to deaden the noise, and if the piping is very rigid or tightly attached so as to be on something of a tension or strain, the noise will be intensified. An examination of the ball cock, so as to tighten all its parts and remove anything that may hinder the valve closing without friction, may overcome the trouble reported.

PROPORTIONS FOR DELIVERY MILK CANS.

From Proportionist, Devon, England.—I should be glad to have some of my fellow subscribers to *The Metal Worker* inform me of the dimensions or proportions of the sheet metal cans used for delivering milk, such as would give proportions that will provide an attractive appearance. One may make such a can, and after it is finished it will not look smart enough to be called attractive. The top or neck may be too large or too small, or the body too squat, and I shall be glad if those who have made such goods would give their views on the proportions of their most shapely delivery cans and other dairy fixtures.

WEIGHTS OF TERNE PLATES.

From J. M., Baltimore, Md.—I would thank you if you can inform me through your valued journal whether the makers of IC 20 x 28 terne plates have a regular standard or basis or uniform weight of black sheets before they are coated, as I should like to be able to determine what a box of tin should weigh. I have bought plates on the representation of carrying 40 pounds, 30 pounds and 8 pounds coating to the box. For instance, I have recently bought a lot of 20 x 28 ternes said to carry 40 pounds of coating, and I find that the weight per box ranges from 235 to 244 pounds. I have also experienced other variations in the different grades of terne plates. Are these variations in the black sheets, or in the coating, or in both? Any light that you may throw on the subject will, I believe, be appreciated by many of the readers of *The Metal Worker*, as well as myself.

Answer.—The manufacturers of terne plates calculate to use black sheets having a base weight of 200 to 204 pounds for each box of 20 x 28 plates. With 40 pounds of coating, the finished plates should, therefore, weigh from 240 to 244 pounds. According to the United States standard gauge, which is used by all sheet manufacturers, a variation of $2\frac{1}{2}$ per cent. either way is allowed on every 100 pounds; consequently, the difference referred to by our correspondent, amounting to 9 pounds in boxes of plates supposed to carry 40 pounds of coating per box, is within this limit. Some variation of weight is also in-

evitable in connection with the coating, as it is practically impossible to make the weight of coating absolute in boxes of heavily coated terne plates. In the cases mentioned, the variation would probably be due both to the black sheets and the coating. Recognizing this possible variation, the American Tin Plate Company are careful to classify their terne plates as "about" 40 pounds, 30 pounds, &c., of coating. In the case of a lot of boxes of plates, it is understood that the average weight should correspond pretty closely to the basis named—that is, their average weight should be from 240 to 244 pounds. If, in buying a quantity of plates, the average weight of the boxes is found to fall short of this standard, the customer would probably have a claim upon the manufacturers for short weight.

PAINT FOR GALVANIZED IRON.

From B. B. C., Temple, Texas.—We wish to inquire of the readers of *The Metal Worker* if there is any paint known to the trade that will stick to galvanized iron. Our experience has been that within a year after the application of a coat of paint it will scale off. Does the galvanizing prevent the absorption of the paint, or is it due to some chemical action between the paint and the zinc forming the coating?

Note.—We shall be glad if our readers will render such assistance as they can to this correspondent. In the meantime we would suggest that it has been the opinion of those who have previously contributed to *The Metal Worker* that it is better for the galvanized iron to be exposed to the weather for a short time, in order that the gloss and any grease or acid that may be on the iron may be washed off by the rain, or removed by the effects of the weather, before a coat of paint is applied.

HOW MANY FEET OF CARBON GAS CAN BE MADE FROM ONE CUBIC FOOT OF GASOLINE?

From W. & Co., Chariton, Iowa.—Can *The Metal Worker* or some of its readers inform us how many cubic feet of carbon gas can be produced from 1 cubic foot of gasoline? We do not refer to hydrocarbon gas, but gas developed by heat without any percentage of air.

Answer.—We have no data in regard to making a permanent gas by the decomposition of gasoline by heat. It is not economical, which may account for the want of literature on this subject. From analogy with the gas production from the heavier oils, we can only estimate that gasoline will yield about 50 cubic feet of permanent gas from 1 cubic foot of the liquid.

PLATING STEEL WITH STEEL.

From W. J., Wappinger's Falls, N. Y.—Can you give me any information as to how to plate steel onto steel? For instance: I have a piece of solid steel with little pin holes below the surface and I want to fill them. How shall I work the battery?

Answer.—We fear that our correspondent will not be able to fill pin holes in steel by the electric process. The electroplating by steel on a plain steel surface is somewhat difficult, but is used on copper plates for producing a hard wearing surface; the steel deposit being very hard but brittle. It can only be made in a very thin layer. The solutions and process are described in "Brant's Metal Worker's Handy Book."

The recent enactment of a law in Great Britain prohibiting the use of poisonous white lead in the pottery industry has brought forth a protest from a number of English manufacturers, who consider the law nearly impossible to comply with. United States Consul Bergh, at Gothenburg, Sweden, in a recent report to the State Department says, however, that at the Rorstrand porcelain factory in Sweden, and at a large factory in Dresden, Germany, this important technical problem has been successfully solved by mixing the white lead in the glazing with certain substances, converting the lead into an insoluble—and thus harmless—silicate of lead.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has advanced sharply and rules from 2c. to 2½c. higher.

Copper is dull and unchanged.

Pig Lead is dull and firm.

Spelter is quiet and slightly firmer in price.

Antimony is unchanged.

Nickel continues firm and active.

Aluminum is active at former prices.

Tin Plates are quiet and without change.

Sheets are in heavy demand; jobbing prices on Black Sheets are slightly lower.

Sheet Copper continues firm and in good demand.

Pig Iron is in active demand and very strong; some brands have been advanced in price.

Hardware is moving actively and the market is very steady.

Plumbers' Supplies are in good demand and prices strong, especially on Iron Goods.

Cast Iron Soil Pipe and Fittings are firm; prices having been reaffirmed.

Solder prices were advanced 2c.

Wire Nails are somewhat irregular in price.

Cut Nail prices were reaffirmed for December; demand is moderate.

Wire is still in good demand and prices firm.

Window Glass prices are being cut some by jobbers.

White Lead is unchanged in price and in good demand.

Linseed Oil has declined 5c. a gallon.

Spirits Turpentine is firm and unchanged.

METAL MARKET.

NEW YORK, November 29, 1901.

Pig Tin.—As a result of the corner in spot Tin, mentioned in our last report, prices have been forced up during the week to extreme figures and the scarcity is more keenly felt than ever. Arrivals of Tin this week amounted to 450 tons, bringing the total for the month to date up to 1100 tons. Jobbers have advanced their prices on small lots of Straits Pig to 34c. to 34½c. per lb. The market was strong at the close, with a possibility of still higher prices before the end of the week.

Copper.—Rumors were rife again during the week regarding a prospective cut in prices of Copper. The report came from the Wall street district, however, and has thus far proved to be unfounded. Owing to depression of the Amalgamated Copper stock interest the situation has become more acute. As to trade conditions, however, the situation is unchanged. Prices remain at their former level and the demand is of limited proportions. Small lots of Lake Copper are quoted by jobbers at 17¼c. to 17½c. and Casting Copper at 16¼c. to 17c. per lb.

Sheet Copper.—There is no change in the general condition of this article. The demand is of good proportions and prices remain firm on the basis of 21c. per lb. for Sheet Copper from store.

Pig Lead.—Dullness is the feature of the demand for Pig Lead and prices are without change. American Pig in small lots is quoted at 4.55c. to 4.60c. per lb. St. Louis advices report continued quietness in the Pig Lead market there, without any change in the volume of demand or sale.

Spelter.—The market for Spelter is quiet and steady. Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. St. Louis reports a firmer tendency in the Spelter market. The fact that the production of the smelters is sold well ahead is brought out more forcibly

from day to day. It is pointed out that at the present time the production does not seem equal to the demand, and higher prices are looked for.

Sheet Zinc.—A moderate demand is noted in Sheet Zinc, prices being unchanged. Jobbers quote 600-lb. cask lots at 6¼c. per lb., and smaller quantities at 7¼c.

Antimony.—No change has taken place in this metal. Cookson's in small parcels is quoted at 10½c. to 11c., and Hallett's at 8½c. to 9c. per lb.

Nickel.—Is unchanged, prices continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—The demand for Aluminum continues active. Prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plate.—The market for Tin Plates is absolutely without change of any sort. Deliveries are still hardly up to the measure of requirements, although the latter are limited. In a retail way, Tin Plates are selling in fair volume in hand to mouth lots. Large buyers apparently have covered their requirements for the next few months. Jobbers' prices are inclined to ease off. American Bessemer Coke Plates, IC, 14 x 20, are quoted at about \$5.65 to \$6.15 per box. The American Tin Plate Company are selling only for the first quarter of next year. A further decline of 3 pence per box in the price of Welsh Plates was reported this week.

Sheets.—Heavy contracts are being placed for both Black and Galvanized Sheets for delivery next year, prices to be the same as those in force by the leading Sheet interest at the time deliveries are made on these contracts. Three or four new Sheet plants are just about ready to start and are soliciting business for next year. The mills are still unable to make deliveries as promptly as required. Prices on Black Sheets are slightly easier, No. 27 One Pass Cold Rolled Soft Steel Sheets being quoted in small lots at about 4.05c. A heavy demand for Galvanized Sheets is noted. The market is firm at 65 per cent. to 67½ per cent. off the list.

Chicago advices are as follows: There is some guessing as to what effect the opening of new mills early in the coming year will have upon prices, but even with this in prospect business continues very active. There is difficulty in obtaining spot deliveries on some sizes and prices are without quotable change, though fluctuating, No. 27 Common ranging from 3.50c. to 3.70c., from store, and Galvanized from 65 and 10 to 70.

Old Metals.—A fairly active demand is noted for Scrap Iron, but prices are without change. Scrap Brass and Copper are moving in pretty good volume at former prices. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14¾c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¼c.
Light Brass.....	per lb. 7½c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.
Tin Plate Scrap, per gross ton.....	\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.25 to 7.50
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Consumers are not only covering their requirements pretty generally for the opening months of the coming year, but some of the most important Eastern foundrymen are seriously considering the question now of making contracts to cover their entire necessities for 1902. The disappearance of stocks at the furnaces and the maintenance of an excellent condition of general business are causing them to feel somewhat apprehensive.

hensive about the course of prices, and they feel that it will be wise to protect themselves. Northern Irons have been marked up to some extent and our quotations are revised accordingly. We quote: No. 1, \$16.35 to \$17.50; No. 2 X, \$15.65 to \$16; No. 2 Plain, \$15.15 to \$16; Tennessee and Alabama brands, No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—The general impression is that the big buying for the first half of the year is over. Some makers are practically out of the market, but there remains a considerable number of the smaller melters who have not covered their wants much, if any, beyond January 1. A fair trade has been experienced this week, largely for quick shipment and small lots. The closing down of furnaces unexpectedly, putting out of this market about 5000 tons of Pig Iron a week, which had been sold and was depended upon for delivery, has resulted in a scarcity of stock, making shipments on old contracts scarce. Prices of Southern products have been strengthened and prices, as corrected, are as follows:

Lake Superior Charcoal.....	\$17.00 to	\$18.00
Local Coke Foundry, No. 1.....	15.50 to	16.00
Local Coke Foundry, No. 2.....	15.00 to	15.50
Local Coke Foundry, No. 3.....	14.50 to	15.00
Local Scotch, No. 1.....	15.50 to	16.00
Ohio Strong Softeners, No. 1.....	17.25 to	17.50
Southern Silvery, according to Silicon.	16.15 to	16.40
Southern Coke, No. 1.....	15.65 to	16.15
Southern Coke, No. 2.....	15.15 to	15.65
Southern Coke, No. 3.....	14.65 to	15.15
Southern Coke, No. 1 Soft.....	15.65 to	16.15
Southern Coke, No. 2 Soft.....	15.15 to	15.65

PHILADELPHIA.—Iron for prompt delivery is scarce, and prices are close to the highest of the entire year. The situation is under the complete control of producers. The business of the past week may be said to be entirely satisfactory. A considerable amount of Iron has been taken for the first three and first six months of the coming year. Prices are just about as they were a week ago, the undertone being decidedly firm at the following figures for Philadelphia and nearby deliveries, and about 25c. less for deliveries within a radius of 100 miles south or west: No. 1 X Foundry, \$15.75 to \$16; No. 2 X Foundry, \$15.50 to \$15.75; No. 2 Plain, \$15 to \$15.25.

PITTSBURGH.—Many consumers are in distress for Pig Iron, the furnaces not being able to get cars to ship out their Iron as fast as needed by their customers. The situation in Iron is very strong, and spot metal is bringing from 25c. to 50c. a ton premium. No. 2 Foundry Iron, for prompt delivery, is sold at \$15.75 to \$16, Pittsburgh, for small lots. On contracts for next year's delivery, No. 2 Foundry has been sold at \$15.50 to \$15.75, and No. 1 at \$16 to \$16.50.

CINCINNATI.—There has been a very good run of trade in Pig Iron throughout the past week. Most of the tonnage is for the second quarter next year delivery. The current inquiry bespeaks a continuation of the present activity. Quotations for Southern Irons are unchanged, and, when the quality is taken strictly into consideration, there is but one basis upon which to figure. The prices on Lake Superior Coke brands were advanced to preserve the same relation to Southern Iron as formerly. The situation is exceedingly strong, and while a conservative spirit is evident, yet it looks as though there would be further advances before the prevailing activity ceases. The scarcity of cars is still causing considerable annoyance. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to	\$15.00
Southern Coke, No. 2.....	to	14.25
Southern Coke, No. 3.....	to	13.75
Southern Coke, No. 4.....	to	13.25
Southern Coke, No. 1 Soft.....	to	15.00
Southern Coke, No. 2 Soft.....	to	14.25
Southern Coke, Gray Forge.....	to	13.25
Southern Coke, Mottled.....	to	13.25
Ohio Silvery, No. 1.....	\$15.35 to	15.85
Ohio Silvery, No. 2.....	14.85 to	15.35
Lake Superior Coke, No. 1.....	15.85 to	16.35
Lake Superior Coke, No. 2.....	15.35 to	15.85
Lake Superior Coke, No. 3.....	14.85 to	15.35

ST. LOUIS.—Conditions in the Pig Iron market continue along about the same lines as last reported. A very good and steady demand ruling, with no marked let up on account of the recent advance. No large orders come to light this week, single lots of 500 tons being about the heaviest that can be noted. The Coke supply among the Southern furnaces seems to be causing considerable uneasiness, and while it has not as-

sumed a very serious phase the railroads do not seem to be in any better condition to meet heavy requirements for cars at this time. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.50 to	\$15.75
Southern, No. 2 Foundry.....	14.75 to	15.00
Southern, No. 3 Foundry.....	14.25 to	14.50
Southern, No. 4 Foundry.....	13.75 to	14.00

CHICAGO REPORT.

Scrap Iron and Steel.—The dealers in Old Material held a meeting in New York City on the 21st inst., but have not as yet made any public report of their proceedings. The trade are awaiting the report of this meeting with considerable interest. The demand is fairly active, especially for Stove Plate, which is decidedly scarce. We quote dealers' buying prices in car-load lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	5.50 to 6.00
Burnt Iron and Grate Bars.....	6.00 to 7.00
Sheet Iron and Hoops.....	9.00 to 10.00
Plow Steel.....	9.00 to 10.00
Breaking Stock.....	6.00 to 7.00
No. 2, such as Shovels, Hoes, &c.....	6.00 to 7.00
Old Boilers—whole (Iron).....	9.00 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	10.50 to 11.50
Old Gas Pipe and Boiler Tubes.....	4.50 to 5.00
Cast Borings.....	9.50 to 10.00
Turnings.....	to 13.00
Horseshoes.....	

Old Metals.—The demand for Tin Foil has been very heavy and price has been advanced to 22c. Pewter is also higher. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14 3/4 c.
Copper Bottoms.....	13 1/4 c.
Copper Clips.....	14 1/4 c.
Red Brass.....	13 3/4 c.
Yellow Brass.....	9 1/2 c.
Red Brass Borings.....	11 1/2 c.
Yellow Brass Borings.....	8 1/2 c.
Light Brass.....	7 1/2 c.
Pipe Lead.....	4 c.
Tea Lead.....	3 1/4 c.
Zinc.....	2.80 c.
Tin Foil.....	22 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	15 c.

Old Rubber.—The surplus in Rubber Shoes noted in last report continues, and while the price is unchanged, it is weak and is likely to go lower. We quote as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7 1/2 c.
Rubber Car Springs.....	.....	5 1/2 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7 1/4 c.
Black Rubber.....	.....	4 1/4 c.
White Rubber.....	.....	8 1/2 c.

Rags.—No change to note. Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lbs. in any quantity.

Anthracite Coal.—There is a scarcity of Chestnut Coal and continued complaint on account of shortage of cars. Prices for December are unchanged, as follows:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

The past week has been comparatively uneventful, as business has run along in regular channels without any important change in general features of the market or in the prices of leading goods. The activity which has prevailed continues without interruption, and manufacturers and merchants, from the producers of the raw material down to the retailers of the finished goods, are fully engrossed in attending to the demands of current business. There is thus on all sides a very satisfactory conditions of things. The lines in which the larger volume of business is doing are season goods on which the jobbers and larger retailers are covering their requirements for next year. Steel Goods, Lawn Mowers, Scythes, Freez-

ers, Refrigerators, Window Screens, Wire Cloth, Poultry Netting, &c., are thus receiving the careful attention of buyers. In this class of goods many of the jobbers are endeavoring to secure the orders of the better class of retail merchants who order well in advance of their requirements, and at relatively close prices on many of these lines, which in some cases cover delivery. The tone of the market is very steady, and in some lines is decidedly strong. The firmness of the Iron market and the difficulty which manufacturers experience in obtaining raw material have a perceptible effect on Hardware prices. There is little buying beyond expected requirements, in anticipation of advances, and there is thus little speculation going on, but there is a confident feeling that most goods can be bought with safety, and the probability that in some lines there will be more or less of a shortage has influence in inducing merchants to place orders early and for liberal quantities.

NOTES ON PRICES.

Plumbers' Supplies.—The advance of the season brings a natural falling off in the demand for Plumbers' and Steam Fitters' Supplies. Yet considerably more business is still coming in to the supply houses than is usual at this late period. Prices in all lines are firm, with indications of a possible advance in some goods, owing to the scarcity of Iron and the consequent strength of the Iron market.

Sanitary Earthen Ware.—Rumors have been current during the past few weeks to the effect that the price of Sanitary Earthen Ware would suffer a decline in the immediate future, owing, it is said, to the disbandment of the Potters' Association. It is true that potteries are now being erected, and some are already in active operation, which are not represented in the association and which are selling their output at prices slightly below the association prices. It is said to be equally true that the wares of the outside plants are not up to the standards established by first-class manufacturers of this line of goods. The goods, it is claimed, lack shape, finish and glaze, and cannot be marketed at the price established by the association, owing to the fact that, where all prices are equal, the trade will send their orders where they can get superior goods at the same price. It seems probable that the Potters' Association will continue for another year and, according to good authorities in the trade, prices of Sanitary Earthen Ware are likely to be maintained on a steady level.

Cast Iron Soil Pipe.—As noted in another column, the manufacturers of Cast Iron Soil Pipe and Fittings, at a recent meeting, reaffirmed the present prices on these goods. The market presents a firm appearance, and no change in prices is looked for in either direction for some time to come.

Solder.—The rapid upward movement in Pig Tin during the week has been accompanied by a corresponding rise in the price of Solder. Manufacturers have advanced their quotations from 1½ to 2 cents per pound. Half and Half Solder, in small lots, is now quoted at 19½ to 20 cents, and No. 1 at 16½ to 17 cents per pound.

Wire Nails.—The Wire Nail market shows no change in general conditions. There is more or less irregularity in price. Small lots from store are selling at \$2.35 to \$2.40 per keg.

Cut Nails.—At a meeting of the Cut Nail Association held last week existing prices were reaffirmed for the month of December. The local demand for Cut Nails continues normal, and the market shows increased firmness. Representatives of mills are adhering to the price of \$2.25 for Nails from store, while jobbers in some instances are selling at 2 cents below these figures in New York.

Wire.—Makers of Fence and Poultry Netting are placing large orders for Wire, having sold large quantities of their goods for delivery next year. Prices are somewhat uneven, and more or less shading is said to be going on, depending on order and point of delivery. Small

lots of Plain Wire in New York are quoted at 2.55 to 2.60 cents, and Galvanized at 2.95 to 3 cents.

Window Glass.—As a result of a meeting held last week between the combined manufacturers and the Window Glass Jobbers' Association, the prices of the latter to the trade were reduced to apply to the entire list of single and double strength all over the country. The discount on less than car lots from store was fixed at 90 per cent. Since the new discount has been in effect, local prices from store have been cut, in some cases, to 90 and 10 per cent. discount.

White Lead.—The demand for White Lead in Oil for completing outside work has constituted the larger part of the business in the local market during the week. No change has been made in quotations, although reports of concessions of from ¼ to ½ cent are current. In a retail way White Lead in Oil is selling at 7 to 7¼ cents per pound.

Linseed Oil.—During the week the increase of available Linseed Oil has become marked, while consumption has shown a decrease incident to the season. Prices have fallen off about 5 cents per barrel and Raw Oil is now quoted in small lots at 56 to 56½ cents per gallon. Boiled Oil is 2 cents advance on Raw. The Oil market has thus quickly changed from a strong position to a weak one, and a further decline in price would not come as a surprise.

Spirits Turpentine.—The market for Turpentine continues steady and quiet, with quotations unchanged. The Southern market is steady and firm. Moderate sized lots from store are quoted at from 38 to 39 cents per gallon.

New Publication.

HAND BOOK OF PRACTICAL MECHANICS. By Charles H. Saunders, Ph.B. Price, \$1. D. Van Nostrand, Publishers, New York, 1901.

This Hand Book of Practical Mechanics is intended for use in the shop and drawing office. It contains tables, rules and formulas and the solution of practical problems by quick and simple methods. The book opens with an extensive alphabetical index occupying 30 pages. In dealing with the subject of the teeth of gear wheels, diametrical pitch is defined, also arc pitch, pitch diameter, &c., and after the definition in each case there follows an example which makes the point clear. A table of diametrical pitch, with corresponding circular pitches, depth and thickness of teeth, is given, in which the thickness and depth of teeth are intended for use with the Brown & Sharpe patent cutters. The method of finding outside diameter and angles of bevel gears is exemplified with numerous formulas, also rules for calculating the strength of the teeth of gear wheels. The method of laying out involute teeth is explained, and is illustrated by an appropriate sketch. A few pages are devoted to the elucidation of logarithms, with a table of common logarithms from 1 to 100.

Problems connected with worm gear are dealt with in a number of paragraphs, which are followed by a table of natural sines, cosines and tangents.

Under the heading of Areas of Plane Figures, the triangle and circle are treated, and a table of diameter, area and circumference of circles is introduced. Among screw threads, we find, grouped together with formula, illustration and tables, the United States standard, the international or metric thread, the sharp V, the Whitworth, the British Association thread, and the Acme standard screw thread, followed by a series of tables bearing upon bolts, nuts, taps and drills. Pulleys, shafting and belting, with rules, tables and various items of useful information, succeed the consideration of screw threads, and the related subject of lathe thread cutting follows, being preceded by the rule for computing the horse-power of an engine.

The weights of iron and steel sheets, neatly tabulated, is followed by a table giving the equivalents of the United States standard gauge for sheet and plate iron and steel. A number of workshop receipts, which practical men will appreciate, are set down. United States weights and measures, the metric system, with English

equivalents, weights and areas of round, square and hexagon steel, and a table of sizes and weights of square and hexagon nuts occupy adjacent paragraphs. The latter pages of the book contain various tables useful in shop and drawing office.

If there is any fault to be found in the arrangement of the various subjects dealt with, purely from a compiler's standpoint, the comprehensive index with which the book opens fully meets this criticism by furnishing the practical mechanic or draftsman with the means of turning directly to the matter with which he is concerned at the moment. The book contains information on a great variety of subjects, and with its rules, examples, tables and useful hints, should be most acceptable to those whose wants it is designed to meet. It is now in the second edition, and the author has, as he tells us, endeavored to add, in the present work, such information as has been suggested from time to time, and yet has preserved the condensed form, which readily commends it to practical men, for constant use.

A Southern Sheet Plant.

The Maryland Sheet & Steel Company is the name of a concern which took out papers of incorporation this week in New Jersey. The temporary offices of the company are given as 41 Market street, Camden, N. J. The charter permits the company to manufacture steel, sheets, &c. The capitalization is placed at \$100,000, but, according to reports, this amount will be increased. The incorporators are: Albert F. Baumgarten of Pittsburgh, Howard H. Dickey, Harry E. Weber, Robert R. Henderson and Charles E. Metz. It is understood that Philadelphia capital is backing up the enterprise. The company have purchased and will operate the plant of the Crucible Steel Company of America, at Cumberland, Md., converting it into a sheet mill, where they will make sheets from No. 14 gauge up.

United States Consular Agent Harris writes from Eibenstock, Germany, that within the past two years the German colonial school at Wilhelmshof, in Witzendhausen, has educated and sent 25 young men to German East and Southwest Africa, Kameroun, Togo, South Sea Islands, Ecuador, Brazil, Philippines, Cape Colony and Sumatra. The course of study given in this school is as follows: History, colonial economics, commercial politics, chemistry, botany, geology, natural history, tropical climates, tropical agriculture, bookkeeping and gardening, with special attention to raising vegetables, fruit and vines and forestry. A chemical laboratory, a blacksmith, a locksmith, a cabinet making, and other departments have been arranged, where work is practiced as taught.

United States Consul Bergh, at Gothenburg, reports to the State Department that the Vislanda-Bolmen Railroad of Sweden recently made an experiment with pressed and dried peat as fuel with an extra train consisting of locomotive, 15 loaded freight cars and one passenger car. The distance was about 22 miles, and the time table was set for lower speed than the ordinary, but this extra train arrived in due time at the respective stations, and at the final station 15 minutes ahead of time. Considering the fact that the locomotive in use was built for using coal only, the result of the trial is regarded as very satisfactory.

The Kansas State Board of Agriculture announces that the winter wheat yield in Kansas for 1901 was 90,045,514 bushels, valued at \$50,479,570. This breaks last year's State record by 13,450,070 bushels. The area now sown in winter wheat is nearly 6,000,000 acres, which with favorable weather will yield more than 100,000,000 bushels. The corn crop in Kansas in 1901 was only 42,605,672 bushels, but the value of the combined wheat and corn crops was only 11.3 per cent. less than that of the same crops in 1900.

In his report for the fiscal year ended June 30 last, Secretary of the Interior Hitchcock says that although

one-third of the land of the United States is vacant, there is but little of this fitted for homes. He recommends that the Government immediately take hold of the proposed irrigation of the 600,000,000 acres of arid land in the West, beginning the work with that already mapped out in the preliminary surveys.

A scarcity of lumber is being felt in the building trade of the East. Hard woods and the higher grades of lumber are specially hard to obtain. It is said that the mills are overcrowded with orders, and cannot turn out their product fast enough to meet the requirements of their customers.

President Samuel Gompers has issued a call for the twenty-first annual convention of the American Federation of Labor, which will meet in Scranton, Pa., on Thursday, December 5.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED NOVEMBER 29, 1901.

Aluminum—

Aluminum (guaranteed over 99% Pure), in ingots for remelting.			
Small lots.	100-lb lots.	100-lb lots.	100-lb lots.
Aluminum Sheet, B. & S. gauge.			
Wider than.	6-in.	14-in.	24-in.
And including.	14-in.	24-in.	30-in.
Nos. 13 to 19.	\$0.42	\$0.44	\$0.47
" 20.	.44	.46	.49
" 21 to 23.	.46	.48	.51
" 24.	.48	.50	.53
" 25.	.47	.51	.54
" 26.	.47	.54	.59
" 27.	.48	.57	.62
" 28.	.48	.57	.64
" 29.	.49	.60	.69
" 30.	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—

Cookson.	\$1.10	@11¢
Hallett's.	\$1.10	@9¢
U. S.	\$1.10	@9¢

Brass, Roll and Sheet..15¢@20¢

Conductors—

Corrugated.

Round or Square.—

Galvanized 1/2 or more, Not St'd.	70¢@5¢
" Not St'd.	70¢@2¢
" Plain Round, 1/2 or more.	70¢@5¢
Nested.	70¢@5¢
Galvanized, Plain Round, Not Nested.	70¢@2¢

Spiral Riveted.

Galvanized	40¢
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Large Ingot.	17 1/2¢@17 1/2¢
Casting.	16 1/2¢@17 1/2¢
Sheet and Bolt.	21¢@21 1/2¢ basis
Cold Rolled Sheets.	22¢@22 1/2¢ basis
Cold Rolled and Polished Sheets.	23¢ basis
Planished Sheets.	24¢ basis
Bottoms, Pits and Flats.	25¢ basis

Eave Trough, Galvanized

Territory.	L. C. L.	
Eastern.	75¢@10¢	
Central.	75¢@7 1/2¢	
Southern.	70¢@12 1/2¢	
S. Western.	70¢@10¢	
Terms, 2% for cash.		

Eave Trough Miters—

Lap or Slip Joint.	list, 25¢
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Elbows—Plain Adjustable—

Eastern List.

Tin.	30¢
Galvanized.	30¢
Perfect Elbows.	40¢

Stove Pipe—

Four-Piece				
No. 1.	\$0.80	.85	.90	1.00
No. 2.	.85	.70	.75	.80
No. 3.	.60	.63	.65	.70

Elbows and Shoes—

Galvanized.	80¢
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Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.	\$3.65	3.70¢
Nos. 18 to 21.	\$3.75	3.80¢
Nos. 22 to 24.	\$3.85	3.90¢
Nos. 25 and 26.	\$3.95	4.00¢
No. 27.	\$4.05	4.10¢
No. 28.	\$4.15	4.20¢

Russia, Planished, &c.

Genuine Russia, accord-	
ing to assortment.	\$11@13
Do. Stained.	6@10 1/2
Patent Planished, 7 1/2 A, 12¢; B, 11¢ net	

Galvanized.

Nos. 10 to 16.	\$12
Nos. 17 to 21.	\$13
Nos. 22 to 24.	\$14
Nos. 25 to 26.	\$15
No. 27.	\$16
No. 28.	\$17
No. 29.	\$18
No. 30.	\$19
88 in. 1¢ per lb higher.	\$21

Lead—

American Pig.	4.02 1/2 @ 4 7/8
Bar.	5 1/2 @ 5 1/4
Pipe.	4 1/2 @ 4 1/2
Tin Lined Pipe.	12 1/2 @ 20¢ off
Block Tin Pipe.	37 1/2 @ 20¢ off
Sheet Lead, full rolls.	7 1/2 @ 20¢ off
Sheet Lead, cut.	7 1/2 @ 20¢ off
Old Lead in exchange.	1¢ per lb.

Mitres, Eave Trough—

See Eave Trough Miters.

Nickel—

Per lb.	60¢@65¢
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Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.	@ 5 1/2
Lots less than 500 lb.	@ 7
Lead, White, in oil, 25 lb tin	
pails, add to keg price.	@ 1 1/2
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.	@ 1
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.	@ 1 1/2
Lead, White, Dry in bbls.	5 1/4 @ 6
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.	@ 6
Lots less than 500 lb.	@ 6 1/2

Oils—

Linseed, City, raw.	60¢@62¢
Linseed, City, boiled.	62¢@64¢
Linseed State and West'n. raw.	60¢@62¢

Spirits Turpentine—

In Southern bbls.	37 1/2 @ 38
In machine bbls.	38 1/2 @ 39

Putty—

In hulk.	\$1.25
In bladders.	2.25
In cans 12 lb to 25 lb.	2.25
In cans 1 lb to 5 lb.	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.	\$12 1/2 @ 13¢
Kerosene.	\$13 @ 13 1/2¢

Pipe, Drain—

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.	60¢@10¢@60¢@10¢@5¢
White Japanned.	60¢@10¢@60¢@10¢@5¢
Nickel Plated.	60¢@10¢@60¢@10¢@5¢
Bronze Finishes in Imitation of Gold.	
Silver, Copper or Bronze.	60¢@10¢@60¢@10¢@5¢
Electroplated in Brass, Bronze or Copper.	60¢@10¢@60¢@10¢@5¢
White Porcelain.	60¢@10¢@60¢@10¢@5¢
Solid Brass and Bronze Metal.	50¢

Roofing Material—

1 Ply Tarred Pa. er.	1/2 ton, \$28 00 @ 28.00
2 Ply Tarred Paper.	1/2 roll, 108 sq. ft.
	45¢@50¢
8 Ply Tarred Paper.	1/2 roll, 108 sq. ft.
	65¢@75¢
Slater's Felt.	roll 500 sq. ft., 50¢@60¢
Roofing Pitch.	1/2 bbl. \$2.35

Rosin—

Common and Good—Strained.	
Rosin, C. & D.	1/2 bbl. \$1.50 @ \$1.55
Rosin, E. & F.	1/2 bbl. 1.60 @ 1.65
Rosin, G. & H.	1/2 bbl. 1.70 @ 1.75
Rosin, I. & K.	1/2 bbl. 1.80 @ 1.85
Rosin, M. & N.	1/2 bbl. 2.90 @ 3.50

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. oars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, 1/2 sq.	\$3.25 @ \$4.50
No. 1 Bangor Ribbon, 1/2 sq.	3.00 @ 3.50
Pen Argyle, 1/2 sq.	3.00 @ 3.75
Peabody Bottom, 1/2 sq.	4.85 @ 5.80
No. 1 Boys, 1/2 sq.	3.35 @ 3.55
No. 1 Chapman Keystone.	
1/2 sq.	3.25 @ 4.25
Vermont:	
Sea Green, 1/2 sq.	\$2.00 @ \$3.15
Purple, 1/2 sq.	3.75 @ 4.25
Unfading Green, 1/2 sq.	3.25 @ 4.50
Red, 1/2 sq.	6.50 @ 11.00

Brownville, Unfading Black:

No. 1 quality.	\$5.25 @ 7.50
No. 2 quality.	\$4.25 @ 6.00

Solder—

1/2 lb guaranteed.	19 1/2¢ @ 20¢
No. 1.	18 1/2¢ @ 17 1/2¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound.

	Barrels	Smaller Quantities
Concentrated Flux.	4c	5c
Eureka Flux:		
Triple Strength.	8c	3 1/2¢
Extra Concentrated.	4 1/2¢	5c
Crystal.	2c	7c
Gedney's Fluid.	2c	2c
Lennox Fluid.	2c	2c
Perfection Flux.	8c	3 1/2¢ @ 1c
Yager's Salts, 1 lb. bottles.	each, 50¢	
5 lb. bottles, per lb., 45¢		

Soldering Coppers—

Per lb.	22¢@24¢
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Spelter—

Western Spelter.	4 1/2¢ @ 4.60¢
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Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.	50¢
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Tin Pigs and Bars—

Banca, pigs, 1/2 lb.	34 1/2¢ @ 35¢
Straits, pigs, 1/2 lb.	31¢ @ 34 1/2¢
Straits, in bars, 1/2 lb.	34 1/2¢ @ 35¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:	
IC, 14 x 20.	\$7.50
IX, 14 x 20.	9.00
IXX, 14 x 20.	10.25
IXXX, 14 x 20.	11.50
IXXXX, 14 x 20.	12.75

Melyn Grade:

IC, 14 x 20.	7.00
IX, 14 x 20.	8.50
IXX, 14 x 20.	9.75
IXXX, 14 x 20.	11.00
IXXXX, 14 x 20.	12.25

Allaway Grade:

IC, 14 x 20.	6.50
IX, 14 x 20.	7.60
IXX, 14 x 20.	8.70
IXXX, 14 x 20.	9.80
IXXXX, 14 x 20.	10.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	10, 14 x 20.....	\$8.00 @ 1.50
"	IX, 14 x 20.....	\$7.00 @ 7.50

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.	15¢
95 lb.	20¢
90 lb.	25¢
85 lb.	30¢

Terne Plates—

N. B.—The following prices are for 10 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.	\$17.50 @ 18.00
About 30 lb coating.	16.75 @ 17.25
About 20 lb coating.	14.75 @ 15.25
About 15 lb coating.	12.75 @ 13.25
About 8 lb coating.	11.50 @ 11.60

Boiler Plates, American—

IXX, 14 x 28..(112 sheets)	\$13.00
IXX, 14 x 28..(112 sheets)	\$14.00
IXX, 14 x 31..(112 sheets)	15.50

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Look Frame, per doz.	\$15.00
Steel Look Frame, per doz.	16.00
Daisy Improved pattern, 1/2 doz.	16.00

Tubes and Tubing—

Brazen Brass, List Feb. 26, 1896, 30¢@35¢ Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, not list Feb. 6, 1899.

Tin.	20¢
Galvanized.	25¢
Fittings for do.	40¢

Zinc—

600 lb oaks 1/2 lb.	64¢
Per lb.	70¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:				
30 gal.	65¢@10¢@70¢			
35 and 40 gal.	65¢@65¢@10¢			
Other sizes up to 52 gal.	60¢@80¢@10¢			
52 gal. and above.	60¢@80¢@5¢			
Extra Heavy Boilers:				
18 to 52 gal.	50¢@10¢@60¢			
53 gal. and above.	50¢@55¢			

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:				
Basin Cocks.	85¢@85¢@5¢			
Bath Cocks and Double Bath Cocks.	65¢@70¢			
Bibs.	85¢@85¢@5¢			
Elbs, Flanged.	85¢@70¢			
Fuller:				
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Gumme, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.
- Soldering Furnaces.**
Burgess Soldering Furnace Co., Columbus, Ohio.
- Speaking Tubes and Whistles.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
- Specialties, Sheet Metal.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Steam and Gas Fitters' Supplies.**
Curtis & Curtis Co., Bridgeport, Conn.
- Steam and Water Engineering and Regulating Specialties.**
Kleley & Mueller, 7-11 West 13th St., N. Y.
- Steel Stamps and Stencil Dies.**
Sackman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.
- Stove Bands.**
Kirk Mfg. Co., Toledo, O.
- Stove Cement.**
Dixon, Jos. Crucible Co., Jersey City, N. J.
- Stove Casters**
Kramer Bros., Dayton, O.
- Stove Linings.**
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.
- Stove and Metal Polish.**
Ayling Bros., Chicago, Ill.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.
- Stove Patterns.**
Cope, G. W., Detroit, Mich.
Gobelle Pattern Co., Cleveland, O.
Millwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
City Forge & Iron Works, Dayton, O.
- Stove Repairs.**
Brauer, A. G., St. Louis, Mo.
Clark, Henry N. Co., Boston, Mass.
Depinet Foundry Co., Erie, Pa.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Kramer Bros., Dayton, O.
Magoon, A. J. & Son, Providence, R. I.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.
- Stove Trimmings, &c.**
Fanner Mfg. Co., Cleveland, O.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.
- Stove Trucks.**
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
- Stoves and Ranges.**
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md.
Boynon Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Clad, V. & Sons, Philadelphia, Pa.
Detroit Stove Works, Detroit, Mich.
Elzton Furnace Co., Taunton, Mass.
Kelipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 203 Water Street, New York.
Gurney & Co., Boston, Mass.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Portsmouth Stove & Range Co., Portsmouth, O.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
- Stoves and Ranges, Gas.**
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Economy Stove & Mfg. Co., Detroit, Mich.
- Stoves and Ranges, Oil, Vapor and Gasoline.**
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- Street Lamps, Gasoline.**
Merkel, H., St. Louis, Mo.
- Tank Heaters.**
American Radiator Co., Chicago, Ill.
- Tanks, Steel and Wood.**
Edwards, J. H., 59 Park Place, N. Y.
- Terne Plates.**
American Tin Plate Co., New York.
- Tinners' Tools, Machines and Supplies.**
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
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Vogel, Wm. & Bros., Brooklyn, N. Y.
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American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gumme, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
- Tin Scrap.**
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.
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Shepherd, Sidney & Co., Buffalo, N. Y.
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Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.
- Torches, Plumbers.**
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Globe Ventilator Co., Troy, N. Y.
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National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Water Closets.**
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.
- Water Fronts.**
Clark, Henry N. Co., Boston, Mass.
- Water Heaters.**
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Conn.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

TIN SHOP FOREMAN; must be strictly temperate, skillful, nonunion, familiar with furnace work, light and heavy iron and pieced tinware; address in own handwriting, stating age, experience, references and wages expected, for two weeks. "Tin Shop," Portland Stove Foundry Company, Portland, Maine. Nov. 30

Young man, about 19 years of age, to learn the wholesale and retail stove business; must be willing to work hard; no limit to advancement if ability is shown. "Learner," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 30

A first-class **PLUMBER, GAS, STEAM and HOT WATER FITTER**; one that is sober, honest and reliable; married man preferred. "C. K.," 2017 Adams street, Toledo, Ohio. Nov. 30

A first-class **TINSMITH**; one who has worked on country houses. F. K. Walsh, Woodmere, L. I., N. Y. Nov. 30

Tin and sheet iron worker to act as **FOREMAN** of a large shop in Boston; one thoroughly competent may apply with references to "C.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 30

An all around man for job shop; one who can do plumbing, steam, water and furnace heating, pump and stove repairing; must be steady and reliable. Box 23, Aurora, N. Y. Nov. 30

A **TINNER and SHEET IRON WORKER**; good references as to honesty, character, industry and ability required; steady place for right man. Geo. H. Hornby, Valentine, Neb. Nov. 30

A bright, hustling salesman, fully experienced in the plumbing supply business; a fine opportunity for the right man. "B. G.," care *The Metal Worker*, New York. Nov. 30

An experienced plumbers' brass goods **FOREMAN or SUPERINTENDENT** in an established Western factory; state experience, age, present occupation and salary expected; communications confidential. "Foreman," care *The Metal Worker*, New York. Nov. 30

Wanted, a **FURNACE SALESMAN** to go on the road; best of references required and a young man preferred. "H. N. S.," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Nov. 30

WOOD PATTERN MAKERS on stove and furnace work. "H.," care *The Metal Worker*, New York. Nov. 30

A first-class **PLUMBER, GAS, STEAM and HOT WATER FITTER**; steady employment to a good man and good wages; married man preferred. "C. K.," 2017 Adams street, Toledo, Ohio. Nov. 30

A good all around **TINNER** with knowledge of plumbing, gas fitting, &c.; must be strictly sober; state age and experience; state wages; steady work the year round for the right man. F. E. Kolter, Wapakoneta, Ohio. Nov. 30

We want a competent man to superintend making of sheet metal goods; must understand machinery for making these goods and be a competent, practical man; good position to right party. "Sheet Metal," care *The Metal Worker*, Hamilton Building, Pittsburgh, Pa. Nov. 30

First-class **SALESMAN** to travel and sell a large line of stoves, ranges and furnaces in the New England States; one who can sell goods may address, with references, "W. H. G.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

A good, steady **PLUMBER and GENERAL JOBBER** for country town. A. A. Langille, Mahone, N. S., Canada. Nov. 23

TRAVELING SALESMEN visiting hardware and house furnishing dealers to sell our Perfect flue stops; are ready sellers; will pay liberal commission. G. A. Higgins & Son, Galesburg, Ill. Nov. 23

First-class **STEAM and HOT WATER ENGINEER** who can sell, lay out and superintend the construction of work; a competent man may address, with references, "H. N. C. Co.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

Two good **SLATE ROOFERS** who also can do sheet metal work. The Rudolph & Son Company, 43 Michigan street, Cleveland, Ohio. Nov. 23

FOUNDRY SUPERINTENDENT by a Pennsylvania stove house; must be a thoroughly practical man, competent to direct expert molders in the best methods of producing true, smooth castings; must have a competent knowledge of irons and cupola management and ability to manage a foundry economically and yet get out its full capacity in good castings; a man who can keep men in good temper yet manage them to get their highest efficiency; a man of modern ideas, stable character and reliability can find permanent employment. Address "Stove Founder," care *The Metal Worker*, New York. Nov. 23

Competent **FOREMAN** for galvanized iron shop; give references. American Blower Company, Detroit, Mich. Nov. 23

A good, steady, A1 **TINSMITH, ROOFER and FURNACEMAN**; one who can cut his own patterns and lay out his own work; must be strictly sober; state age and experience and wages expected for a steady job the year round; nine hours. P. O. Box No. 1, Ocean City, N. J. Nov. 23

A New York house want a first-class **REPRESENTATIVE** for the building and contracting trade of New York and vicinity for 1902. "First-class," care *The Metal Worker*, New York. Nov. 23

CORNICE CUTTER; A1 man; one who understands directing a large force of men. "W. A. R.," care *The Metal Worker*, New York. Nov. 23

A **CREDIT MAN** familiar with Western hardware trade, by a leading wholesale house; state age, experience and references, also salary. "K. M.," care *The Metal Worker*, New York. Nov. 23

Experienced **ESTIMATOR**; one who understands all branches of the cornice business, also capable of estimating slate and tile roofing; good salary to the right man; state age, experience, &c. Box 172, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

FOREMAN, energetic, thoroughly experienced, up to date steel range maker. Address, with references and salary expected, Box 169, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

FOREMAN; an energetic and thoroughly experienced, up to date steel range maker. Address, with references and salary expected, Box 170, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Nov. 23

SHOP FOREMAN; to take entire charge of new shop for erection of stoves, furnaces and ranges; steady position guaranteed to the right man. "Shop Foreman," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

STOVE REPAIR MAN; one thoroughly acquainted with repairs of all kinds made in the Pennsylvania district; good salary to a first-class man; none other need apply. "Stove Repair Man," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

FLOOR MAN; to take charge of sale of stoves, heaters and ranges, wholesale and retail; must be experienced and first-class; no other need apply. "Floor Man," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 23

Several good **CORNICE WORKERS and TINSMITHS**, at once; good wages for nine hours' work. Address or call with tools ready to go to work, H. E. Wieber, 56 Broadway, Rondout, N. Y. Nov. 23

At once, four or five good **CORNICE MAKERS**; will pay first-class men \$3 per day; union shop; nine hours per day; no strike; come at once prepared to go to work; job will last all winter. Columbia Roof & Paving Company, Columbia, S. C. Nov. 23

SHEET IRON WORKER; a steady job for good mechanics; state wages wanted and experience; also a good **CUTTER or WORKING FOREMAN**. "O. B. P.," care *The Metal Worker*, Cleveland, Ohio. Nov. 23

A young man for office work with some experience in the stove business; one who is ambitious to work and build himself up. "New York City," care *The Metal Worker*, New York. Nov. 23

TIN and SHEET IRON WORKER; thorough good, all around man; \$3 per day with steady work to right party; reference required. T. W. Dorsett, 1113 Clinton street, Hoboken, N. J. Nov. 23

SALESMAN of unexceptional ability to take charge of Boston office and cover adjacent New England territory, representing a line of cast iron, steam and water house heating boilers of highest reputation and having an established trade. Address, with references, "M. B. H.," care *The Metal Worker*, New York. Nov. 2

Good, steady, A1 **PLUMBERS**; will pay \$4 per day with nine hours; I want first-class men that understand their business and

are rapid with their work; good men can have steady employment; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Nov. 16

SLATE ROOFERS, at once; none but first-class men need apply. Williams & Manogue, Troy, N. Y. Nov. 23

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of a large stove plant; state experience, reference, age, &c. "Trade-Mark," care *The Metal Worker*, New York. Nov. 23

SITUATIONS WANTED.

By an expert stove pattern maker, competent to design and carve; would like to correspond with a stove works in order to take full charge of the pattern shop; capable of getting up up to date original stove patterns. "F. C. Competent," 426 Fourth avenue, N. E., Troy, N. Y. Nov. 30

By a strictly sober and reliable **TINNER**, able also to do ordinary cornice and plumbing work; would like situation in town of not less than 2000 inhabitants in Northwestern States; wages \$2.25 per day; can approach customers; good on furnace work. "Tinner," care *The Metal Worker*, New York. Nov. 30

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As **CLERK** in the retail hardware business; have had experience for the past two years in city store. "Z.," care *The Metal Worker*, New York. Nov. 30

PLUMBER; junior, A1 mechanic, desires position in city or near-by country town. "Plumber," 944 Tinton avenue, New York. Nov. 30

By a first-class **WOOD STOVE PATTERN MAKER** of years' experience. "Pattern," care *The Metal Worker*, New York. Nov. 30

By a first-class **TINNER, CORNICE MAKER and SLATER**; will correspond with a view to securing a steady job. Chas. J. Greer, 370 E. Union street, Circleville, Ohio. Nov. 30

SALESMAN visiting the hardware and stove stores wants a good selling side line. "A. D.," care *The Metal Worker*, New York. Nov. 30

A master of the heating business in every detail wants agency for the Northwest for a first-class line of steam and hot water heating boilers, &c.; no subservency to Chicago branch considered; deal must be based upon expenses of advertising and working territory and commission on sales; will give bond for security; can guarantee fair business at the start and steady growth. "Northwest Prospect," care W. Leikammer, Letter Carrier, Milwaukee, Wis. Nov. 30

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Desire to represent good house on contract, salary and commission in Baltimore, Washington, Richmond, Norfolk and adjoining territory; know of large deals pending relative to plumbing line. "Z. Z.," care *The Metal Worker*, New York. Nov. 30

Young man, 24 years of age, temperate and obliging, five years' experience at plumbing, tinning and general jobbing, would like to locate in Southern town; nonencumbered, can go any place. H. J. Stone, General Delivery, River Head, N. Y. Nov. 30

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A gentleman with good business qualifications and fair personality, who has had a long and successful practical experience in heating and plumbing, as engineer, manager and superintendent, buyer and salesman, is open to correspondence with some good concern that may be in need of such a man. "Qualified," care *The Metal Worker*, New York. Nov. 30

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To represent manufacturers as their agents on the Pacific coast, strictly on commission, the following lines: Steel ranges, up to date air tight heaters, steel and cast hollow ware, stove pipe, elbows, dampers, rods, bolts, urns or kindred lines. What have you got? "S. A. M.," 748 First street, Portland, Ore. Nov. 23

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Batavia, Ill.

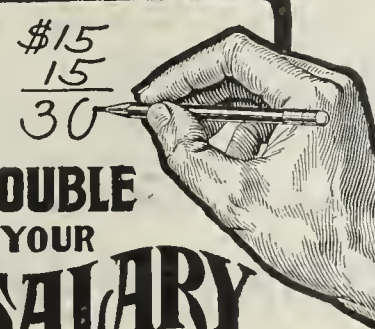
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Well established hardware, tin and stove business, together with a well paying tinshop, with or without property. Is one of the best locations for an enterprising man to make money. Possession Jan. 1st or later.

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Moon Desk Co.	130 "
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**Section 1 ~ Pages 1-66
Diagrams and Patterns**

Demonstrates in a simple way, and by means of illustrations and descriptive text, about 50 examples of sheet metal pattern work, such as the method of cutting can breasts, flared tinware, scale scoops, oval boiler covers, lips for measures, elbow patterns, &c.

**Section 2 ~ Pages 69-88
Epitome of Mensuration**

Compiled with regard to the requirements of the tinner, describing how to find the area of a circle, the circumference of a circle, the contents of a sphere, a cylinder, a cone, and other information relating to the work of a tinsmith.

**Section 3 ~ Pages 89-120
Tables, Rules, Recipes**

Gives tables of the weights of sheet metals, including the weight of black sheet iron, sheet lead, and galvanized iron sheets with their dimensions; the weight of lead pipe per foot; the weights of tin plates, sheet copper and sheet zinc. Several pages are devoted to tables giving the areas and circumferences of circles, the capacity of cans, the number of barrels in cisterns and tanks, sizes of tinware in form of frustum of a cone, &c., and practical receipts, including mixtures for solders of different kinds, soldering fluxes, and various cements.

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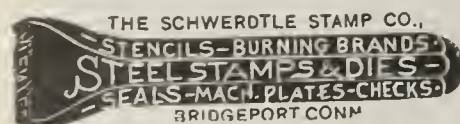
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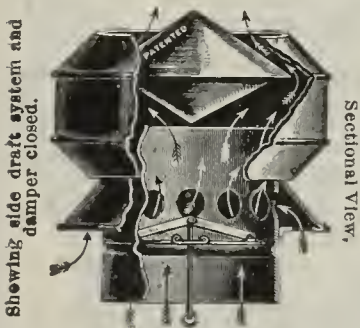
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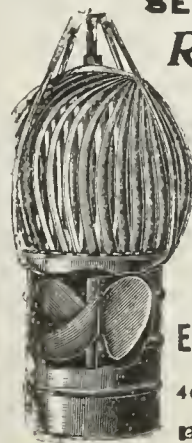
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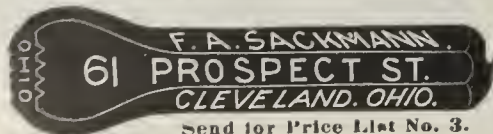
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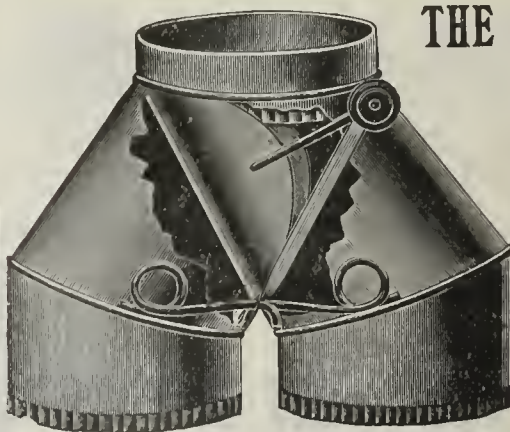
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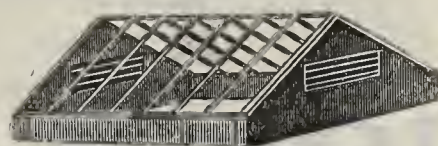
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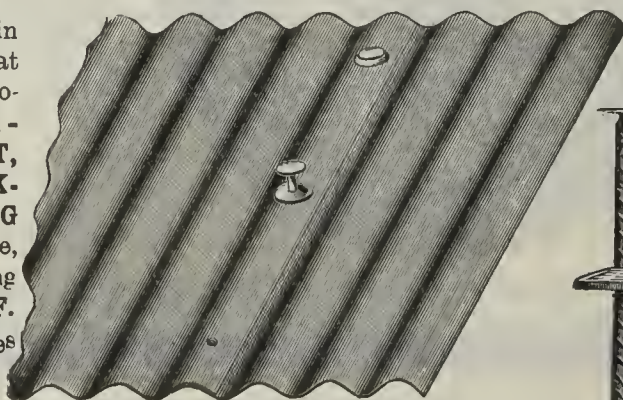
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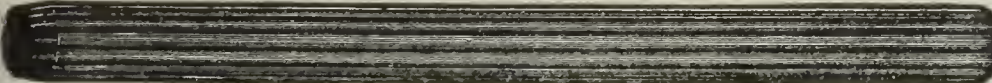
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Filling and Firing a New Kettle.
The Use of a Pyrometer.
Materials Used in Galvanizing.
Building and Setting Kettles.
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Cleaning Sandy Castings with Sulphuric Acid.
Preparing the Work for Dipping in the Zincing Bath.
Drying the Work.
The Heat of Zinc.
Dipping the Work in the Molten Metal.
The Formation of Dross in the Kettle.
Running Over, or "Sweating," Zinc Dross.

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Plan of Tinning Plant.
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Removing Paint or Grease.
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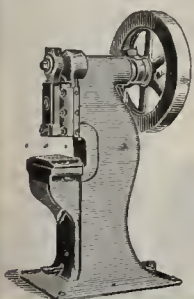
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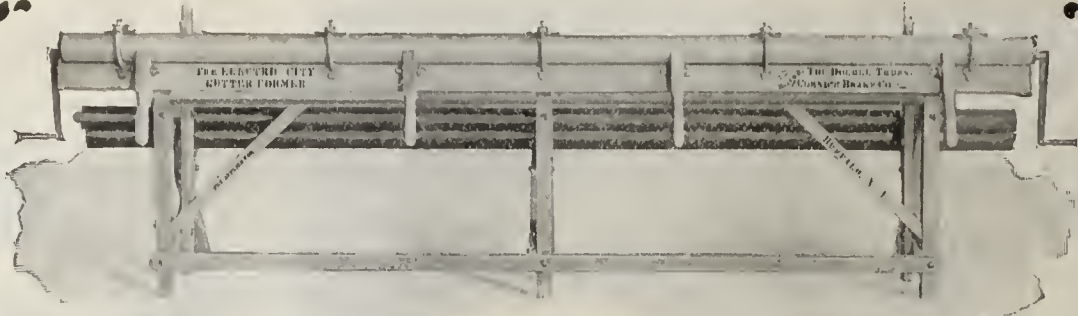
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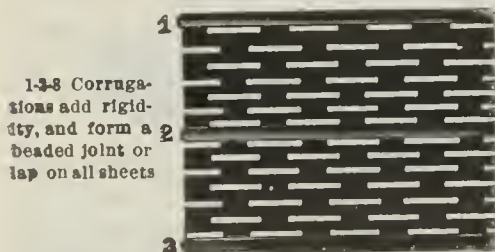
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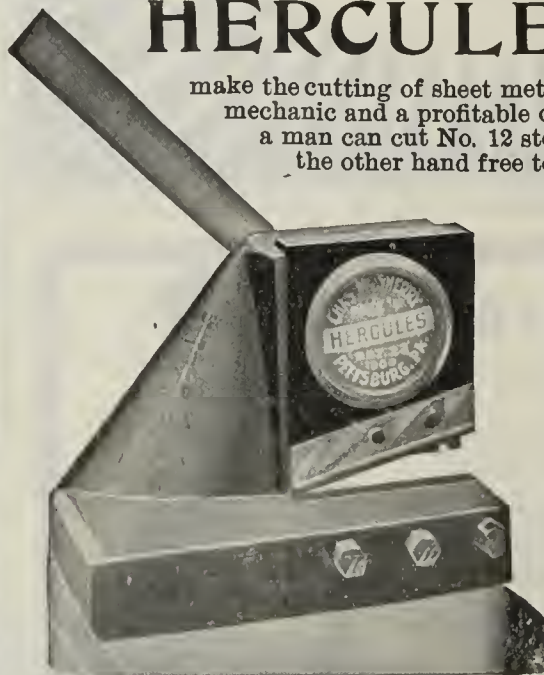


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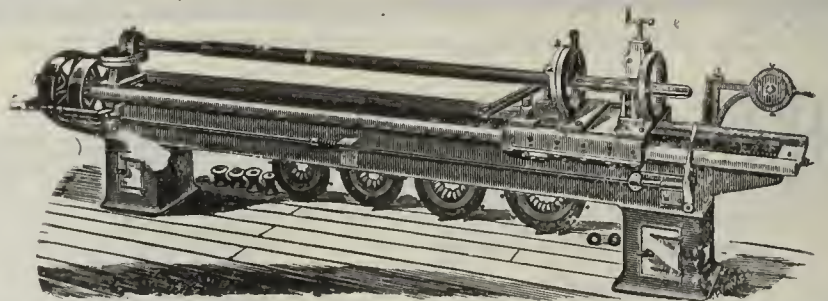
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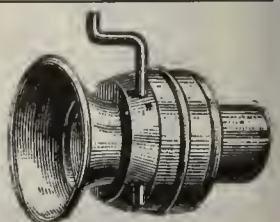
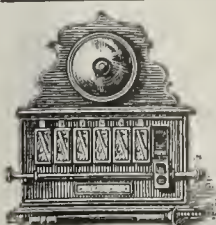
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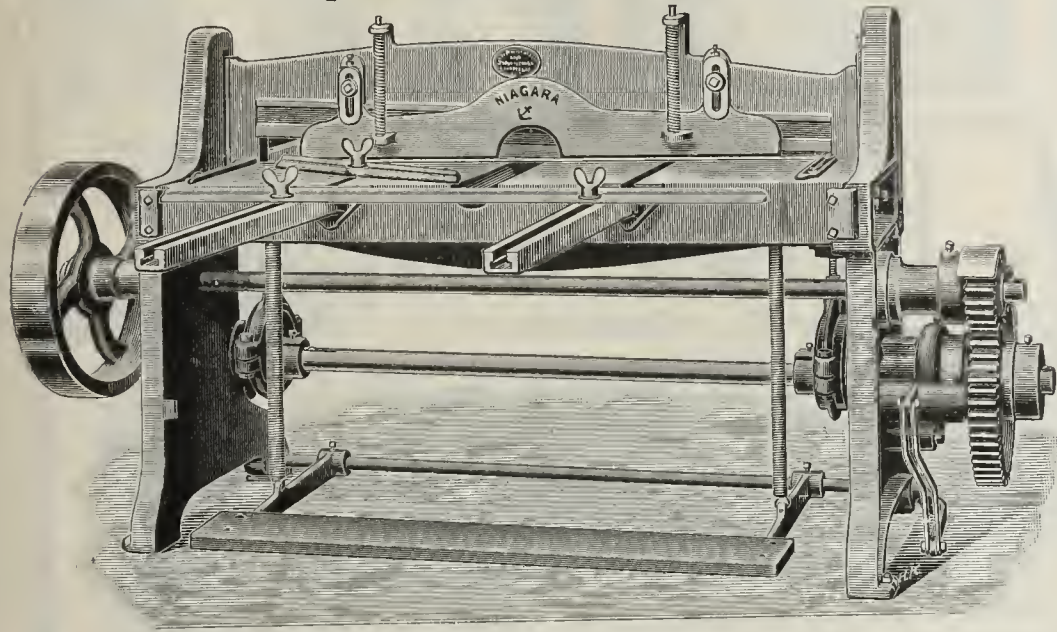
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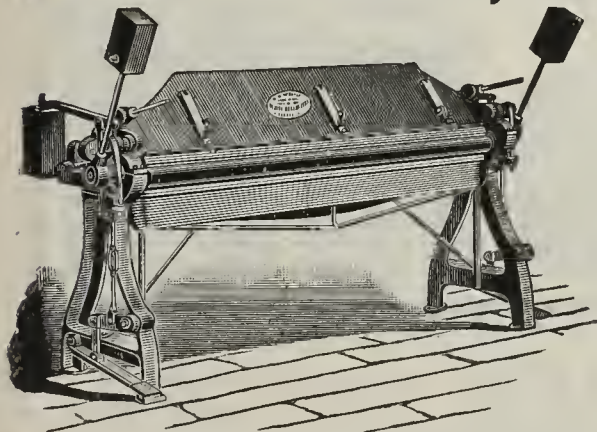


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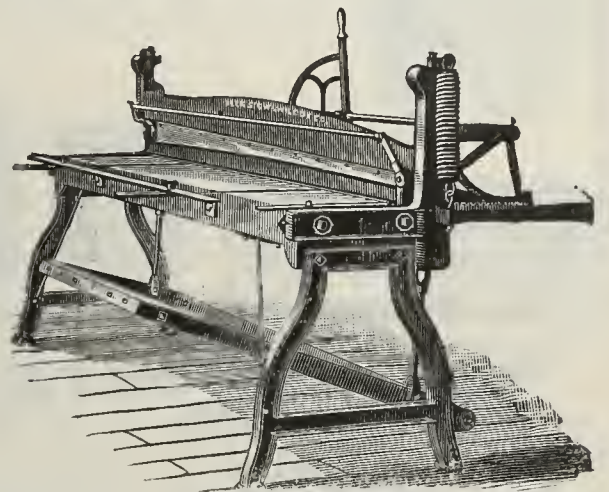
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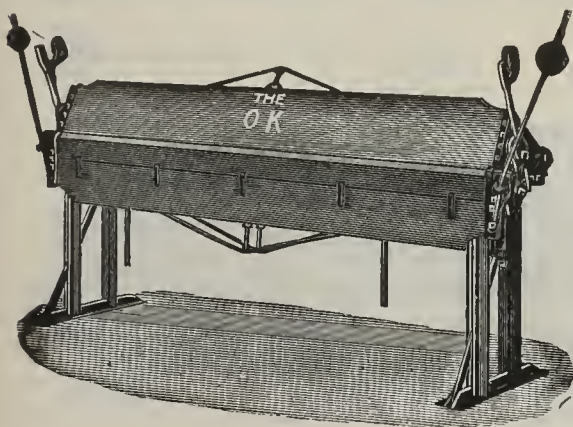
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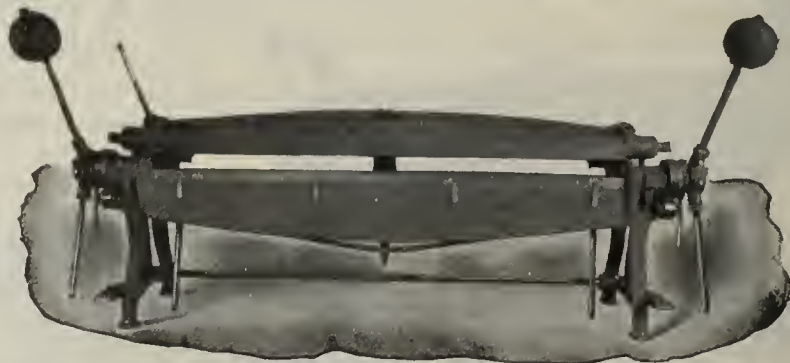
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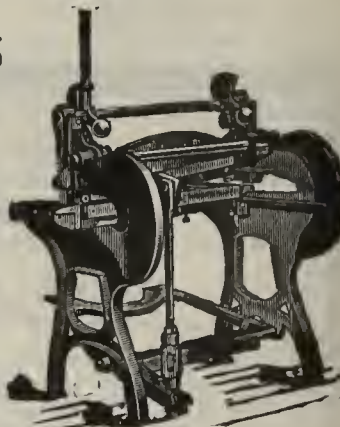


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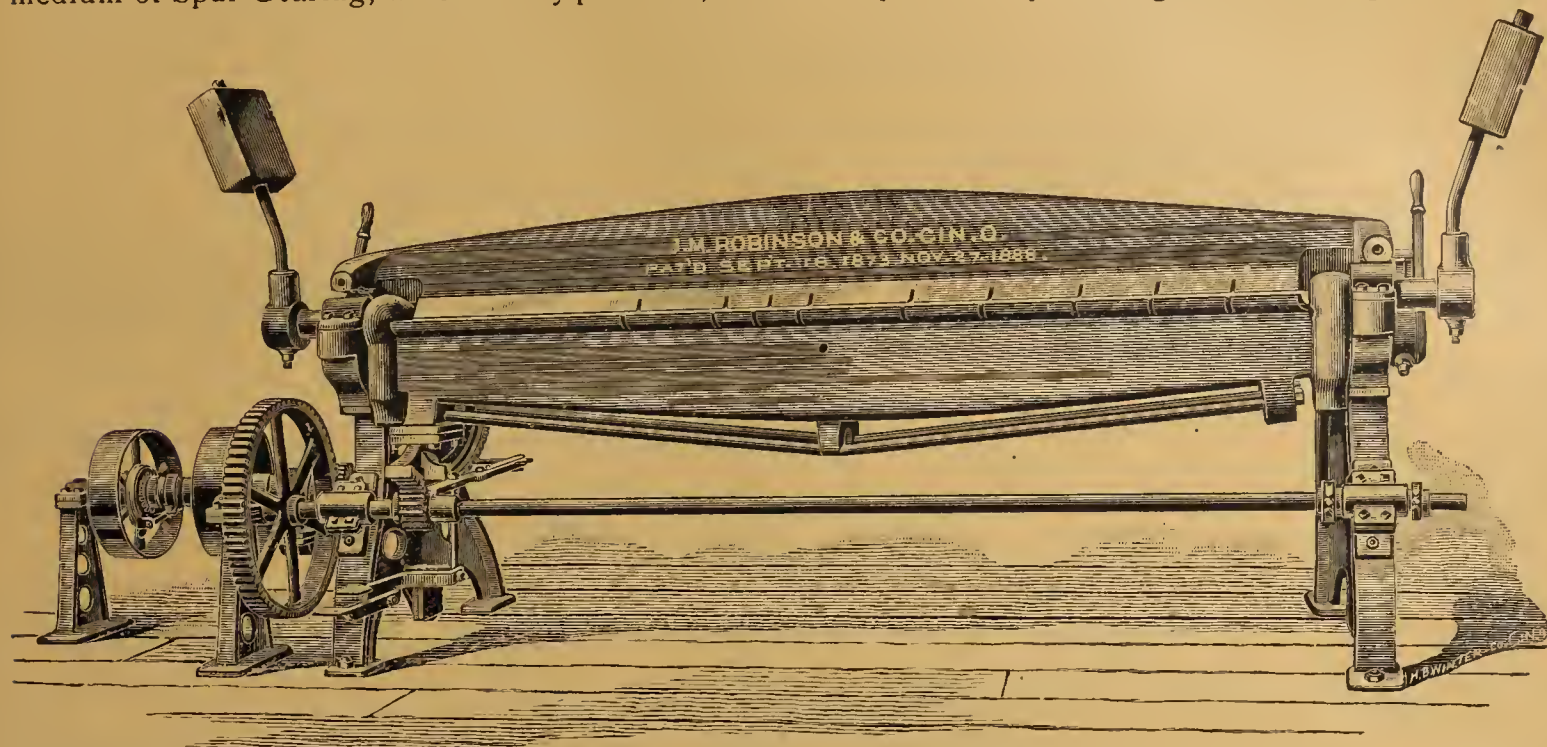


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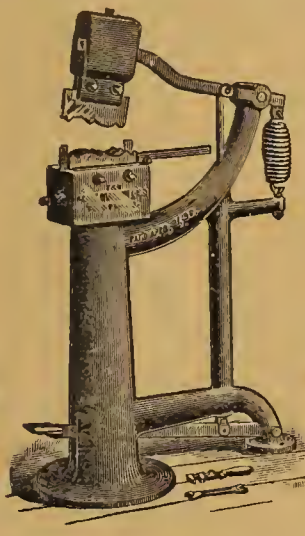
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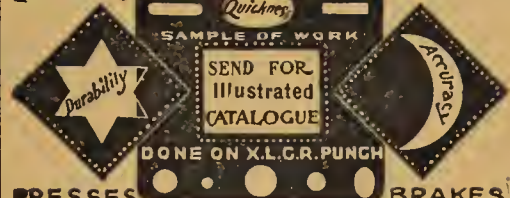


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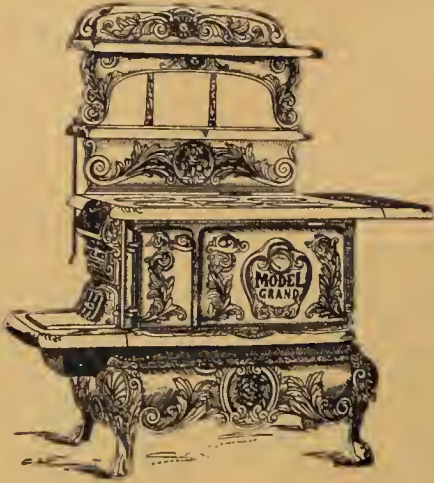
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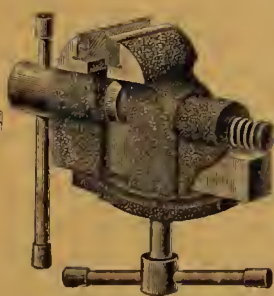
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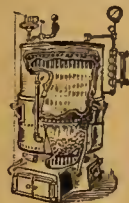


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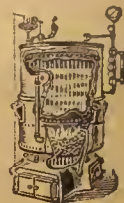
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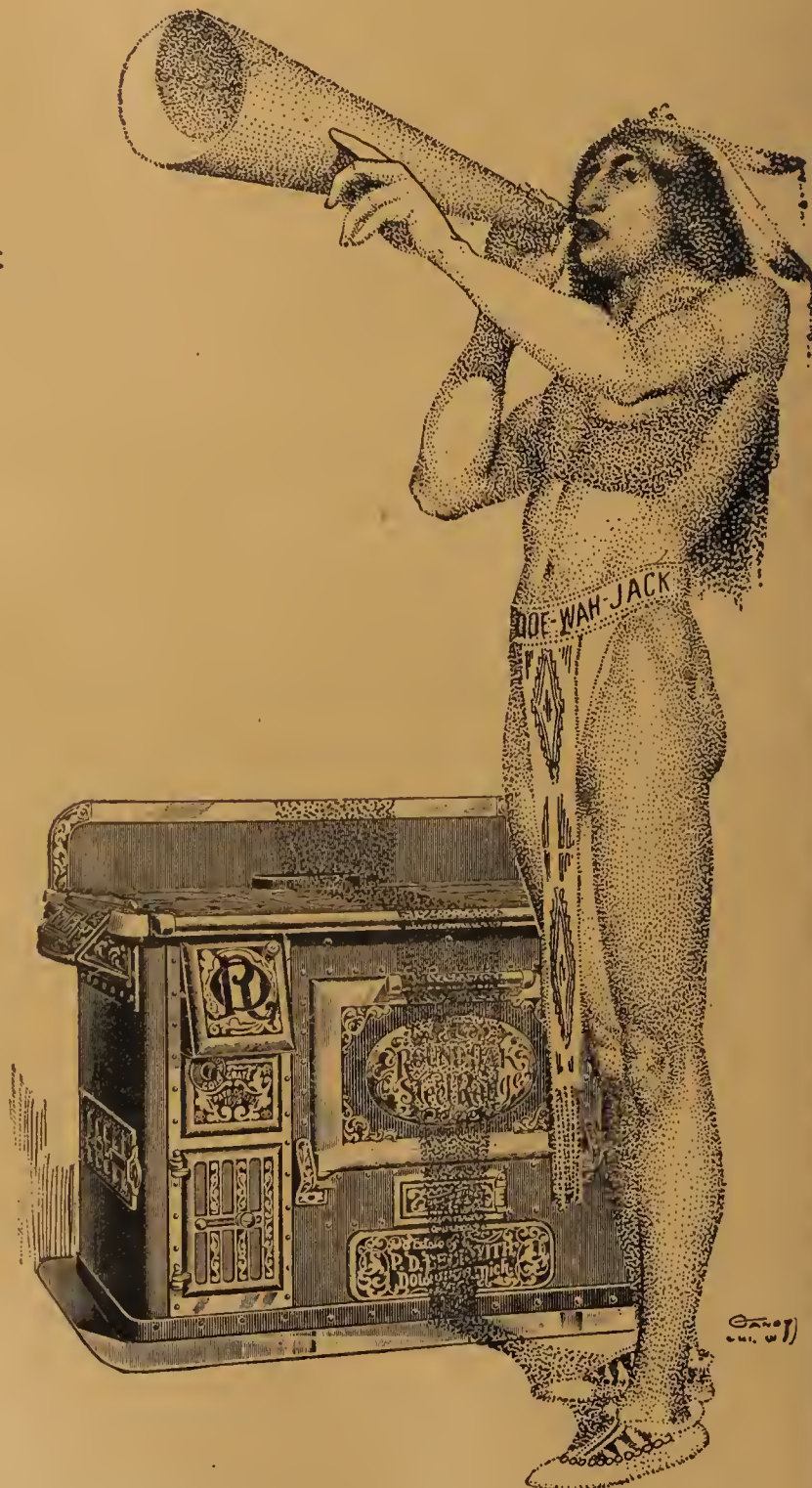
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We are speaking a long way ahead

of next season's trade that you may plan to learn more about it. Its percentage of gain in sales this year beats everything we make except the furnace. It will pay you to take up the *Round Oak Steel Range*.

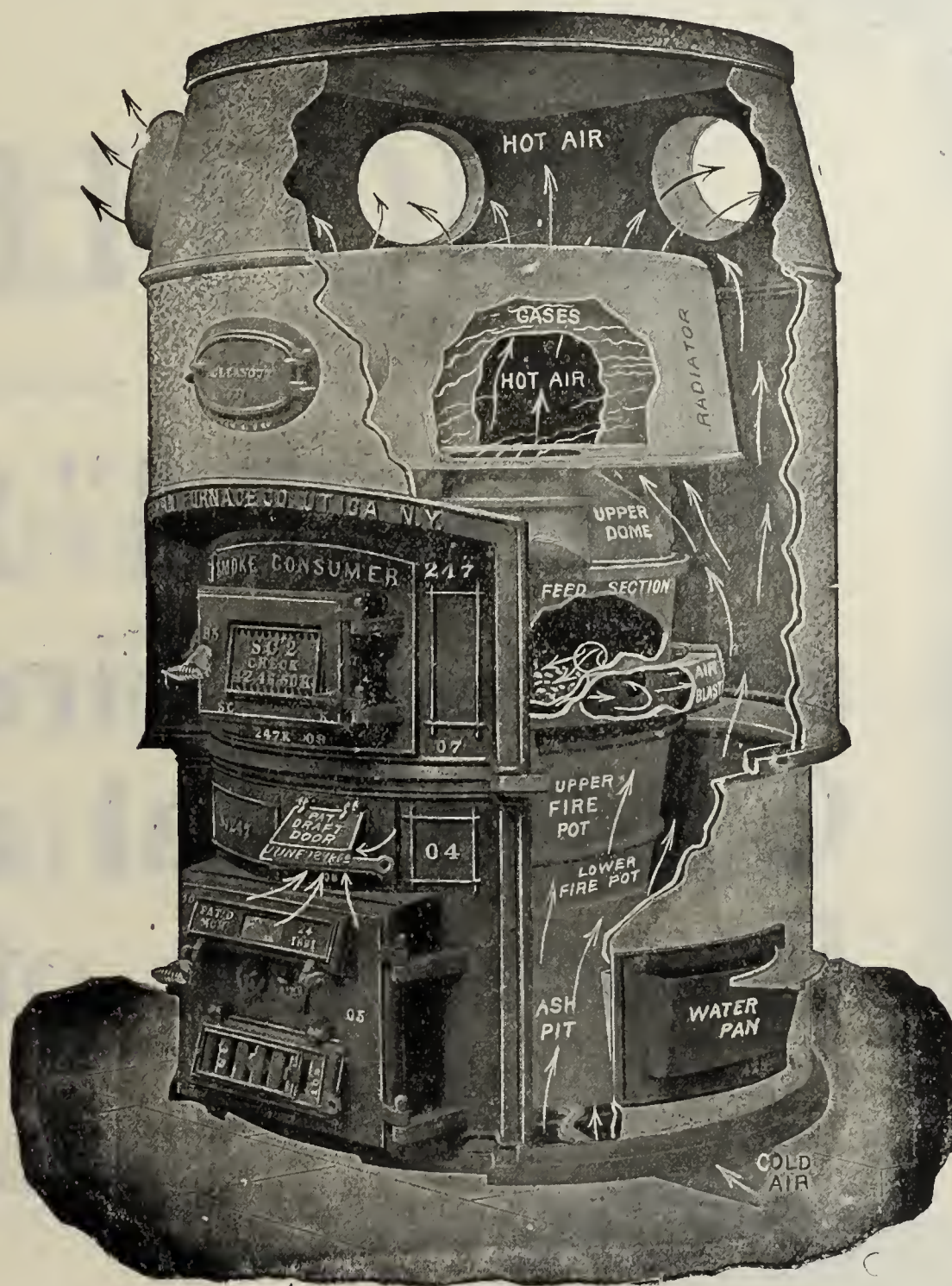


ESTATE OF
P. D. BECKWITH, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY

Burning Soft Coal in a Heater of ordinary construction is like fishing for minnows with a cod net; like trying to carry sweet cider home in a market basket.

The **KERNAN** Smoke Consumer BURNS THE SMOKE.



200TH SERIES.

A HEAVY ALL CAST IRON HEATER, CONSTRUCTED SOLELY FOR
ECONOMICAL SOFT COAL BURNING.

International Heater Co., UTICA, N. Y.

BOSTON.

NEW YORK.

CHICAGO.

DENVER.

Largest Makers of Heaters in the World.



ANOTHER

“Garland” Stove awarded First Prize Gold Medal at the Exposition of 1900

First Prize

The Michigan Stove Works

Largest makers of Stoves

DETROIT. CHICAGO.



WORKS AT DETROIT, MICHIGAN.



VICTORY

es and Ranges

ze and the only

e Pan-American

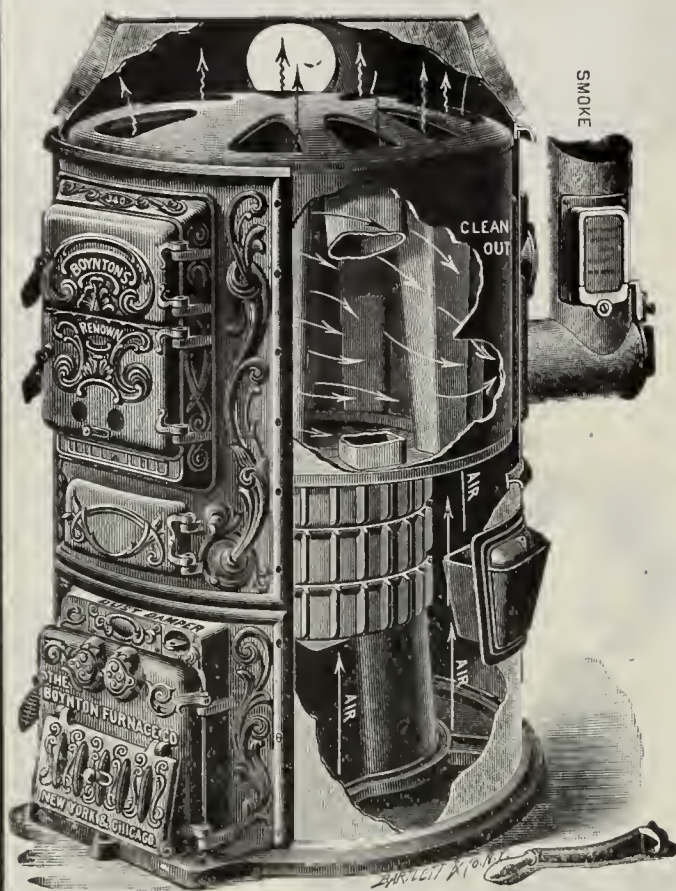
Paris, 1900.

ove Company,
d Ranges in the World.

O. BUFFALO.



BOYNTON'S "RENOWN" PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK, CHICAGO.

**SERIES
22-27-39**

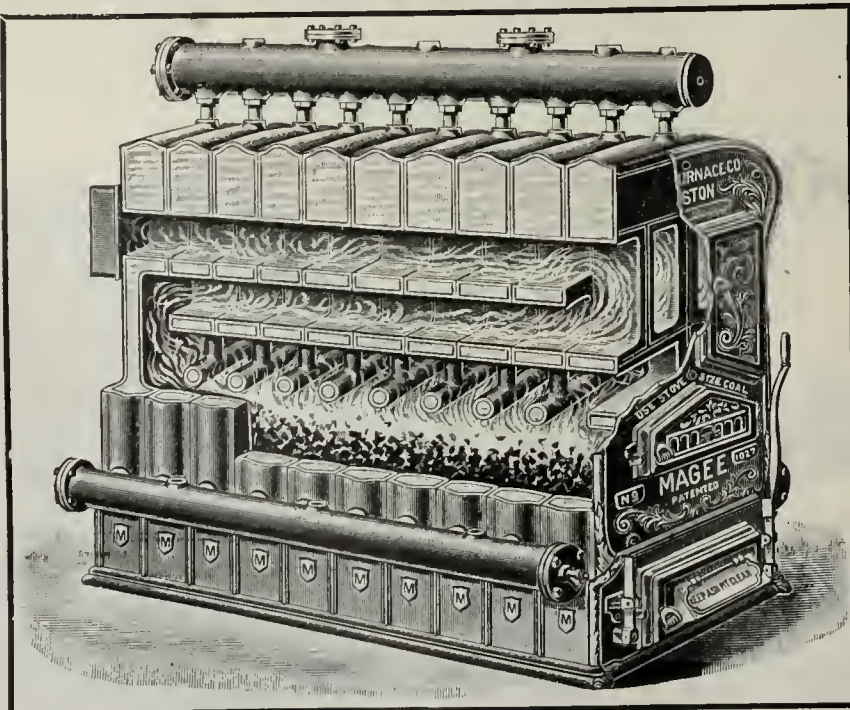
Magee
HEATERS

**Hot Water
= Steam =**

TWENTIETH CENTURY.

The circulation and fire surface are such as to give the best results, and the grate area and fire surface are perfectly proportioned. The series is adapted to large systems of heating where results are absolutely required. The fire pots are deep and grate perfect.

Pamphlets Free.
Upon Application.



We make this series in 19 sizes for steam ranging from 400 feet to 4200 feet of radiation, with a steady water line in each size; also 19 sizes for water, ranging from 650 feet to 6900 feet of direct radiation, all equally efficient.

Three Widths of Fire
Chambers.

MAGEE FURNACE COMPANY, 32-38 Union St., BOSTON.

Steam and Hot Water Heaters, Warm Air Furnaces, Combination Warm Air and Hot Water, Ranges, Stoves, &c.
Largest Line under one name in the United States.

The New WALKER BOILER

for Steam: for Water

A boiler to keep fire with little attention, to easily work up to its full rated capacity and a margin left over for emergencies—that's our boiler.

The price may be lower than you are paying for boilers of equal size.

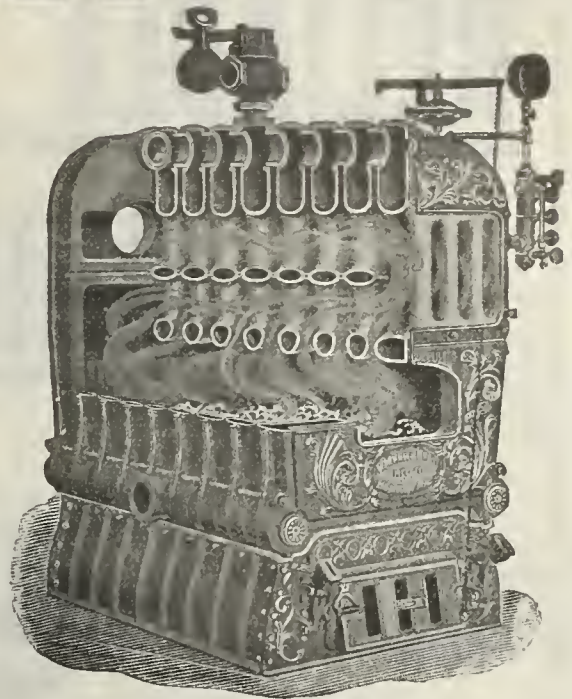
Malleable iron, copper-coated, push nipples.

Prompt delivery.

Write for discounts.

Walker & Pratt Mfg.
Company,

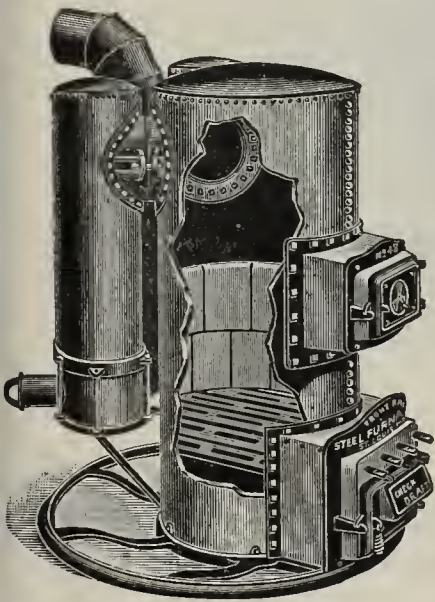
31-35 Union St., BOSTON, MASS.



Makers Also of

CRAWFORD
RANGES.

Finest Factory in this Line in the World.



Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

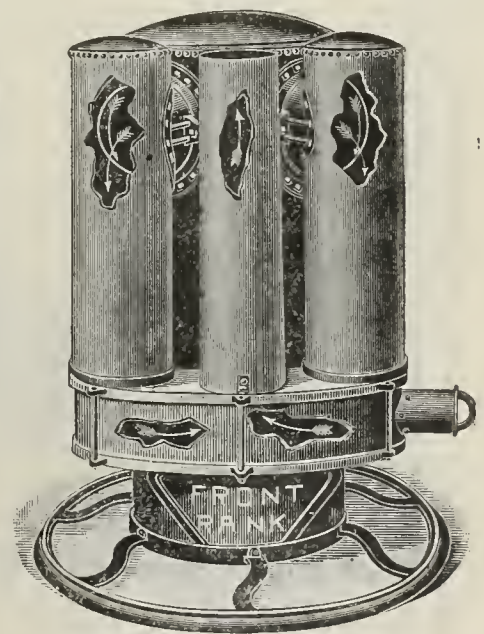
The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



1902

RELIABLE VAPOR STOVES

AND RANGES.



It is a source of gratification that we are again able to point to a number of improvements for the coming season, that not only signify our desire to keep abreast of the times, but our determination to keep the RELIABLE in the position it has so long enjoyed, that places it beyond competition.

Our trade-mark "RELIABLE" stands for all that is best in stoves the world over. If you wish to control the vapor stove business of your city, place a sample line of RELIABLE stoves on your floor. They will do the rest. This is the line that never disappoints.

Send for 1902 Vapor Stove Catalogue. It is yours for the asking.

THE SCHNEIDER & TRENKAMP CO.,
CLEVELAND, CHICAGO, SAN FRANCISCO.

Ideal Boilers.



Ideal Invincible Water Boiler.

We welcome the critical customers. Great pains are taken to supply their wants, for with our extensive assortment of Ideal Boilers it is easy to please the most exacting buyers.

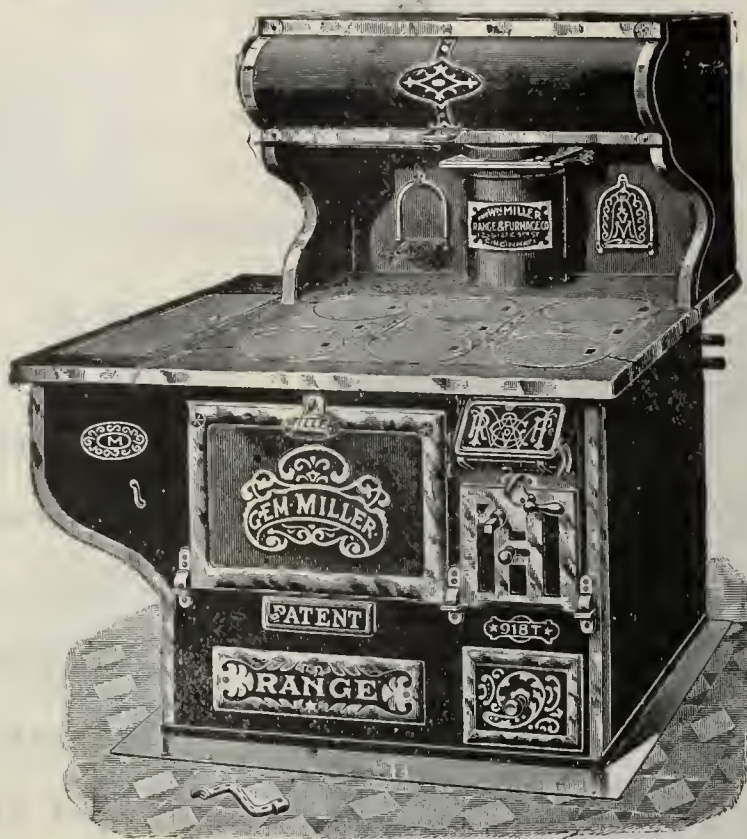
✂ ✂ ✂ ✂ ✂

Send for our 1901 catalogue—
profusely illustrated.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
CHICAGO.

DO you want to buy a good Number One, Medium Priced Range that will Roast and Bake with the best of them? If you do then do not be persuaded to buy anything but a



GEM-MILLER

STEEL-PLATE

RANGE

Which are far superior to other so-called first-class Ranges as to Roasting, Baking and Durability that are made.

WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickeled instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

Special attention is called to the easy manner of Removing and Replacing the Grates and Grate Frames in these Ranges without interfering with the Water Backs or Linings. Simply by taking out the small bolt and removing the Front Grate the entire Bottom Grate and Frame can be drawn out through the Front Draft Door.

BUY ONE AND BE CONVINCED.

**The Wm. Miller
Range & Furnace Co.,**

Write for Agency.

Write for Prices.

Nos. 125 and 127 E. Fifth Street,
CINCINNATI, O.

JEWEL STOVES AND RANGES..



**A Complete, Well Advertised Line.
Low Prices and Good Workmanship.**

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



CATALOGUES SHOWING

**GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS**

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

ECONOMY GAS HEATING STOVES.

FOR NATURAL OR ARTIFICIAL GAS.

Fourteen sizes and six styles of the most powerful, *Durable, Economical* and *Attractive* gas heating stoves on earth.

The only complete line of "closed front," "artificial coal filled" Gas Heating Stoves on the market.

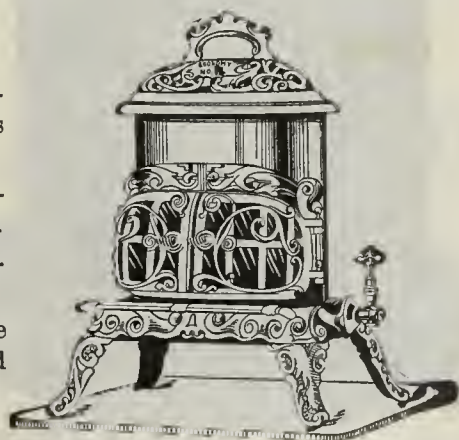
Absolutely free from odor or condensation.

By securing the agency for the *Economy*, the dealers are sure to enjoy largely increased sales and profits. Manufactured by

ECONOMY STOVE & MFG. CO.,

Write for Catalog.

DETROIT, MICH.



BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

SEND FOR CATALOG.

MILWAUKEE, WIS.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR.

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST. N.Y.
COLUMBUS, O.

BRANCHES. 79 LAKE ST. CHICAGO,
ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable.

Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces.
Furnished for either Brick or Galvanized Iron Casing.

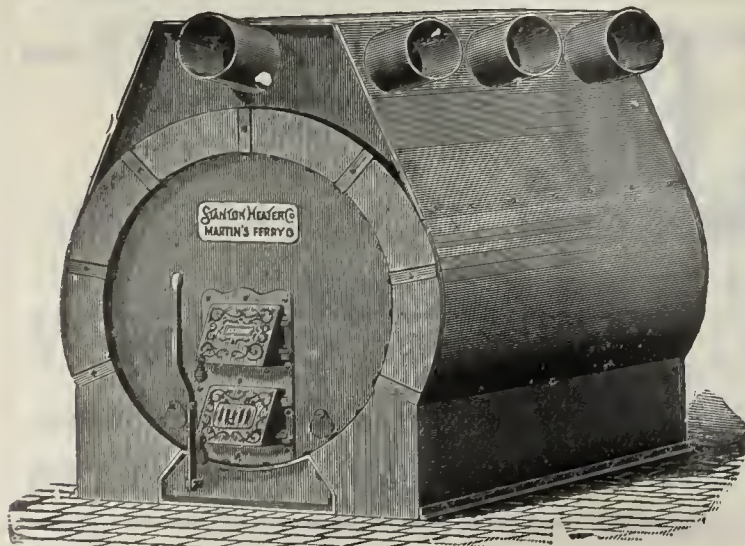
SEND FOR CATALOGUE.

Bergstrom Bros & Co

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASSED.



CADIZ, OHIO, June 18th, 1900.

GENTLEMEN :--We had a Stanton Furnace No. 84 put in last Fall and have nothing but praise to say of it. The space heated is 50,400 cubic feet, which it keeps comfortable in the coldest weather. Our fuel costs only one-fourth what it used to and besides is perfectly clean. We take pleasure in recommending it. Respectfully,

J. EHRHART, Hotel Ehrhart.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See Our Advertisement Next Week!



Gurney Heaters

Provide every advantage a heater can provide,—the very best material, the most durable and approved construction, insuring the greatest efficiency from the least possible consumption of fuel.

CAPACITIES FULLY GUARANTEED.

Don't you wish to handle the BEST? Send for our latest trade catalogue.

GURNEY HEATER MFG. CO., 74 Franklin Street, Boston.
111 Fifth Ave., New York City.
Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.



Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover and Elm Sts., BOSTON, MASS.

Some Furnaces

are like some people—they have insatiable appetites, but give nothing in return for what they consume.

THE BENGAL FURNACE

burns less coal and gives more heat than any other furnace made.

Remember *Quality Lives Long After Price is Forgotten.*

MAKE NO MISTAKE.

Secure the agency for the BENGAL before it is too late.

— MADE BY —

FLOYD, WELLS & CO.,
ROYERSFORD, - - PA.

**AIR TIGHT WOOD STOVES,
HEATING STOVES,
COOK STOVES.**

**Fire Place Heaters,
Furnaces.**

SEND FOR CATALOGUE AND PRICE LIST.

THE B. C. BIBB STOVE CO.,
BALTIMORE, MD.

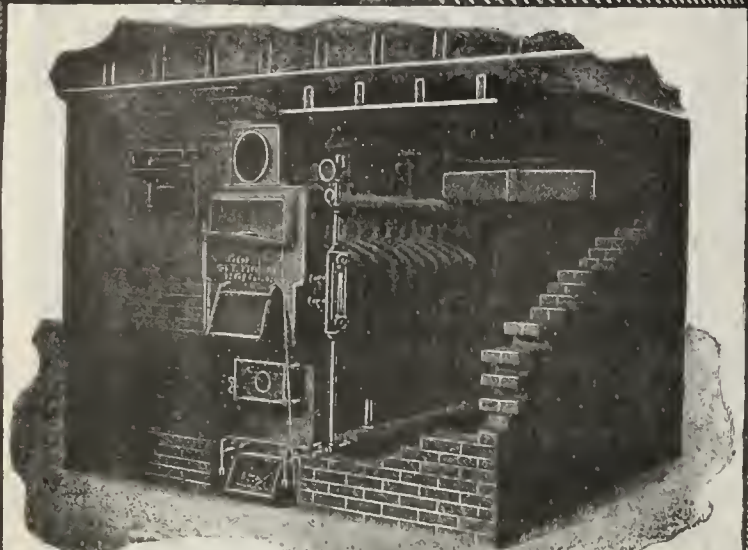


THE H.B. SMITH CO.

WESTFIELD,
MASS.

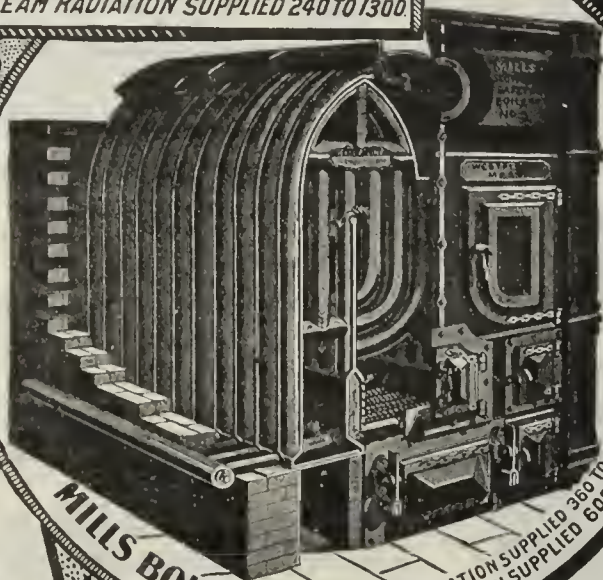
EUROPEAN
AGENT,
AUG. EGGERS

BREMEN AND
NEW YORK
CITY.

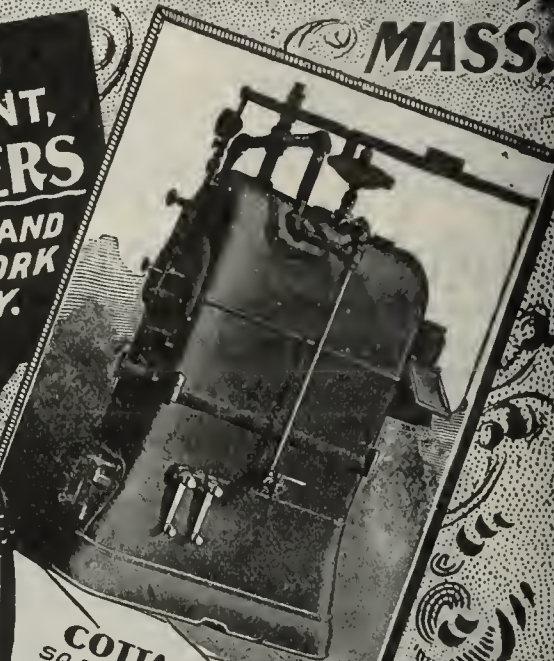


GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

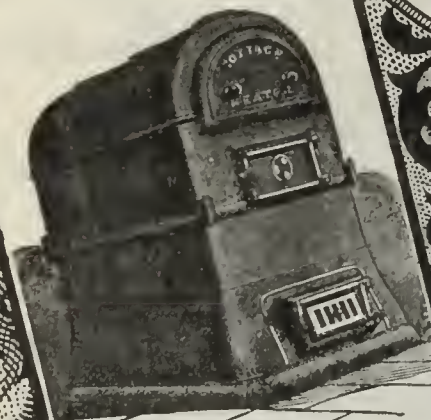
PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.



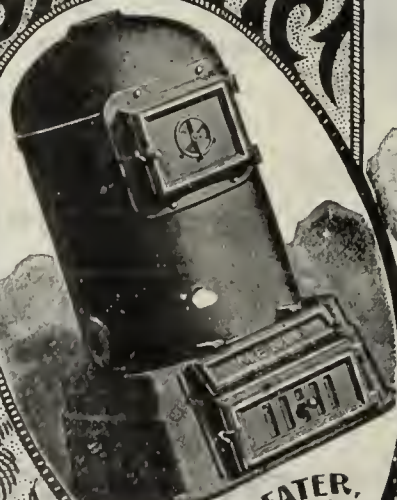
MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



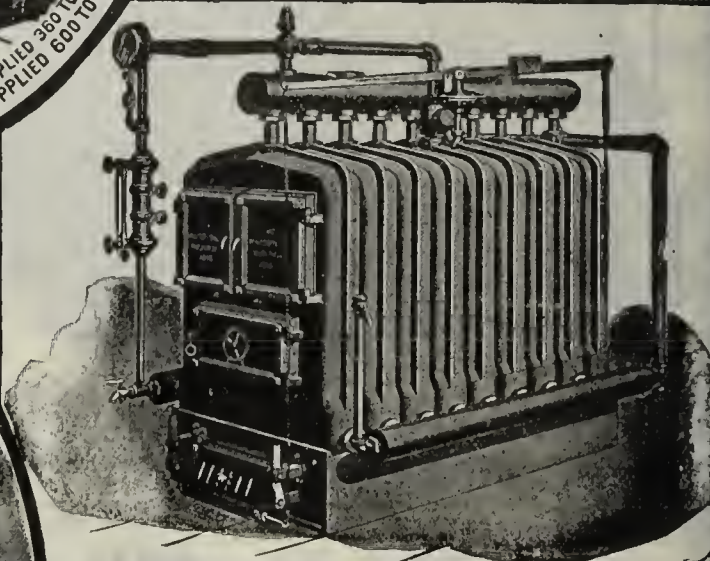
COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

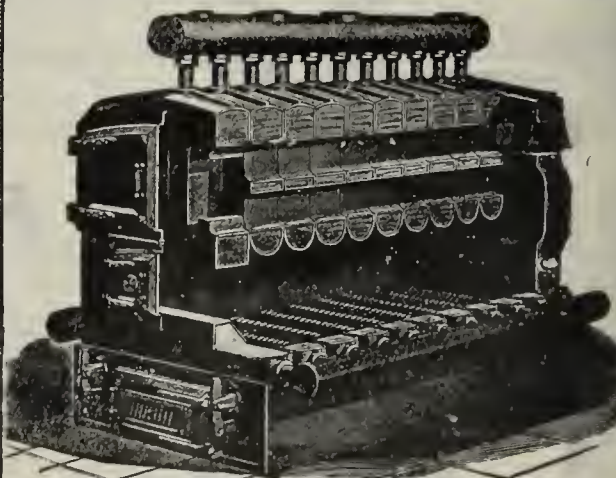
Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

SALESROOMS:

133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

C. H. FIFIELD.

ESTABLISHED 1820.

T. N. PAGE.

FIFIELD & PAGE,

Dealers in

HOT AIR FURNACES, COOKING RANGES, WATER HEATERS.

Gasoline and Oil Stoves for Cooking and Heating.

Refrigerators, Custom Made Tinware, Aluminum Ware, etc.

Telephone Connection.

27 and 29 FRONT ST.

SALEM, MASS., November 23, 1901.

DIGHTON FURNACE CO.:

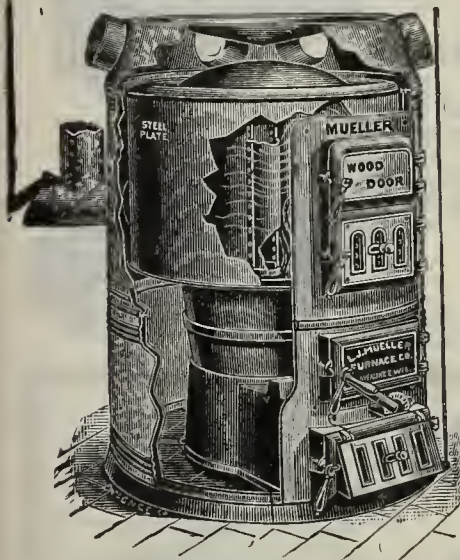
DEAR SIRs—Please send us one No. 450 "WINTHROP" Portable Furnace, less cases and less ash pit.

We want above as soon as possible as it is to replace a No. 4 "WINTHROP" set by us in 1875 and which has now gone from old age and left a first-class record. Hurry it along.

Yours,

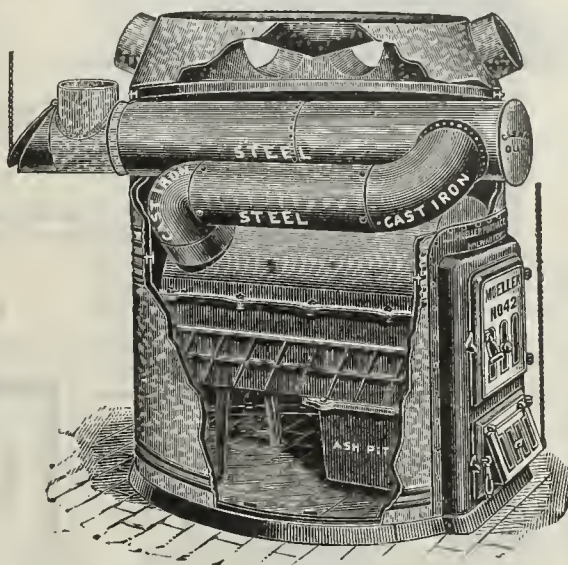
FIFIELD & PAGE.

FOR WOOD OR COAL.

**MUELLER****Furnaces
and Boilers****FOR ALL KINDS OF FUEL.**Everything in the
Heating Line.

Get Our Special Register Offer.

FOR WOOD.

**L. J. MUELLER FURNACE CO., 190 Reed St., Milwaukee, Wis.*****For a swell job***

You ought to know our line—many a dealer loses an opportunity to make a good profit because he knows only heating stoves and furnaces.

We can post you concerning steam and hot water heating, so you can get a share of what is due you.

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS.

GILT EDGE FURNACES AND COMBINATION HEATERS.

Registers, and Tin and Galvanized Iron Furnace Fittings:

MANUFACTURED BY

R. J. SCHWAB & SONS CO., = Milwaukee, Wis.

They regulate
heat in residences,
offices, stores,
mfg. plants.
Guaranteed.

...Wanted...

Mechanics familiar with the installation of house heating furnaces
or boilers to sell and put up

No electricity
or compressed air.
Simple as
a heavy spring
motor can be.

SPRAGUE *AUTOMATIC* REGULATOR

DAMPER and VALVE

Must be of good address and have ability as salesmen. Salary
\$15 per week and expenses. References required.

WRITE THE MANUFRS.,

HOWARD THERMOSTAT CO., Oswego, N.Y.
WEST WATER STREET

They Are
"Coal Savers."

Money Makers
for Dealers.



WEIR *ALL* GAS AND *STEEL* SOOT *FURNACE.* CONSUMING

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but
a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

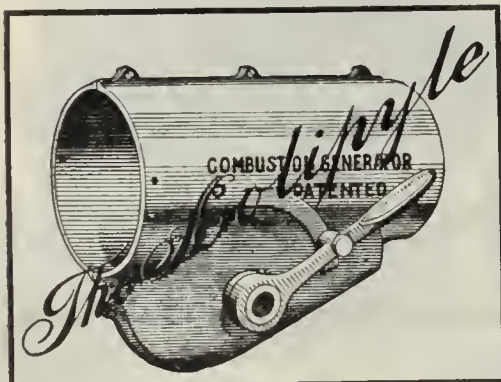
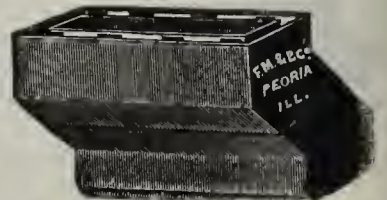
The saving of labor in putting it up really makes it the
cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



Saves Coal, Increases Heat,
Keeps Temperature Even,
Prevents Escape of Coal Gas,
Reduces Labor,
Avoids Sifting Ashes,

When Applied for Domestic Use
to Smoke Pipe of

House Furnace,
Hot Water Heater,
Low Pressure Boiler,
Stove or Range.

Aeolipyle Company,

237 Water St., New York,

Tel. 1849, John.

U. S. A.

Championnd Marquart

Double Flue Ranges.

Only Double Flue Ranges in the
Market. The Greatest Fuel Saver.
Draw-Out Grate.

Handsomely Finished Through-
out. Prices Within Reach
of all.

**CHAMPION
STEEL RANGE CO.,
CLEVELAND, O.**



J. M. Litchfield, New York, N. Y.
Kettleson & Degetan, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.

We are represented by the following
houses:
Lee-Glass-Andresen Hdw. Co., Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co., Kansas City.
Michigan Distributing Co., Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
Jacob Retterer, Chicago, Ill.
Corbett, Felling and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.

FOR **MICA**

Sheet, out or uncut, Powdered and Flake,

WRITE TO

**ASHEVILLE MICA CO.,
ASHEVILLE N. C.**

MICA **EUGENE MUNSELL & CO.**
MINERS & IMPORTERS
NEW YORK. CHICAGO
218 WATER ST. 117 & 119 LAKES



I can hold my hand over my chimney. No waste heat. I use a Rochester Radiator and save half the fuel.

THIS shows the construction of the ROCHESTER (stove-pipe) RADIATOR.

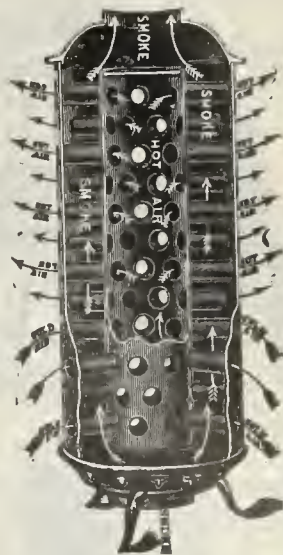
THIS has been advertised extensively for years.

THIS is the one your customers have frequently asked you about.

THIS is built like a steam boiler.

THIS has 9/10 of its radiating surface directly over the hot current, where every square inch of surface is as effective as six at the side.

THIS gives the results that have so surprised those who have used them and induced our patrons to do so much missionary work for us. Your patrons will gladly do it for you, if you give them the opportunity. Get a few started and after that they will almost sell themselves.



4,866 sq. ins.

Rochester Radiator Co.,

100 Furnace St., Rochester, N. Y.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,

373 Atkinson St.,

Geneva, N. Y.

CABINET

PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enamelling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

SEND FOR CATALOGUE.

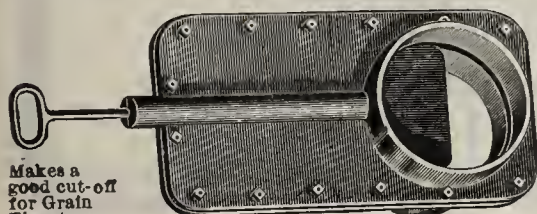
The G. S. BLODGETT CO., Burlington, Vt., U. S. A



IMPROVED WIND-GATE

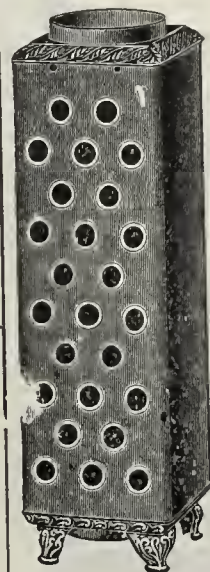
SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,
NEW HAVEN CONN.



Makes a good cut-off for Grain Elevators.

Independent Square Stove Pipe Radiators

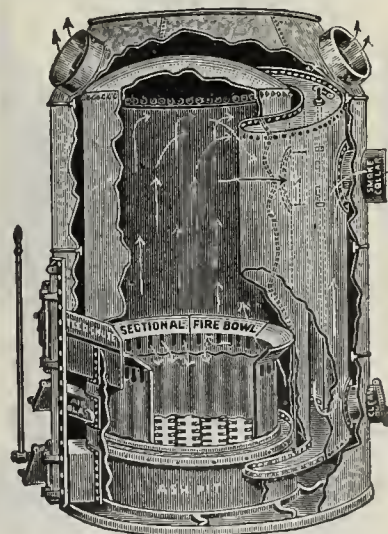


[are not back numbers
[They are] right up-to-date.] If you want the very latest in radiators, ask us.

Independent Register Co.,

152 Champlain St.,
CLEVELAND, OHIO.

The LENNOX



Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

East Frederick St., Marshalltown, Iowa.

CATALOG FREE.

MICA

Specially Prepared for the Stove Trade.

OHIO MICA CO., CANTON, OHIO.



HOT WATER AND HOT AIR

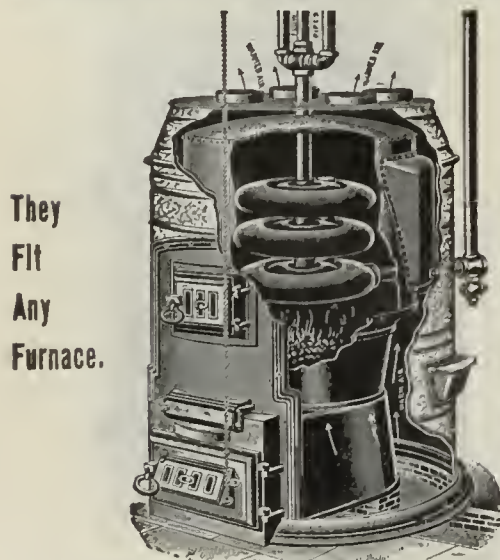
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

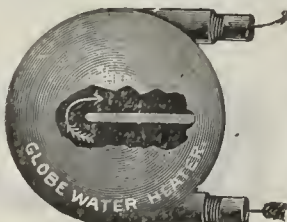


Showing one method of application. These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity. Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

GLOBE

WATER HEATER

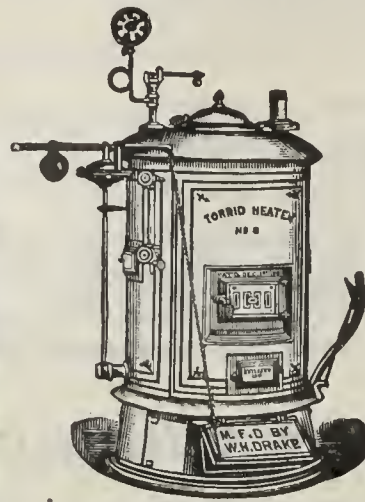
Attached to any Furnace will heat water for domestic use.



Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., - - Chicago, Ill.

"TORRID HEATER." *It is Practical in Design.*
FOR STEAM OR HOT WATER. *It is Safe, Being Tested to 200 Pounds.*
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.



SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St.,
NEWARK, N. J.
Factory: Hackettstown, N. J.

AHEAD AS USUAL.

We have not only stood the test of time, but look at the result of physical test of Quimby Engineering Company before Building Committee, on competition for public work in an Eastern city.

QUIMBY ENGINEERING COMPANY.

PHILADELPHIA, PA., Aug. 5, 1901.

MESSRS. J. H. McLAIN CO., Canton, O.

Gentlemen:—We hereby certify that one-half section of the Cornell Boiler was tested by us to destruction to-day, and that it was ruptured at Two Hundred and Fifty Pounds per square inch hydraulic pressure. Very respectfully yours,

QUIMBY ENGINEERING CO.,

Attest: JOHN M. LUKENS,

H. H. Quimby, Proprietor.

Chief of Bureau of Steam Engine and Boiler Inspection, City of Philadelphia.

It Clearly Puts Our "Cornell" IN A CLASS BY ITSELF.

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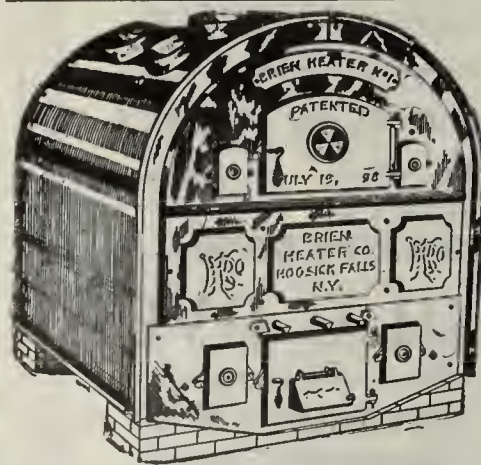
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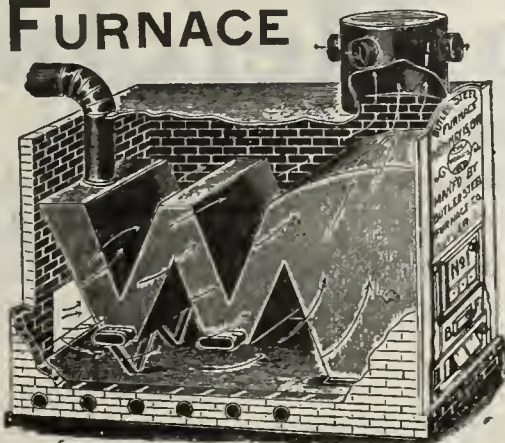
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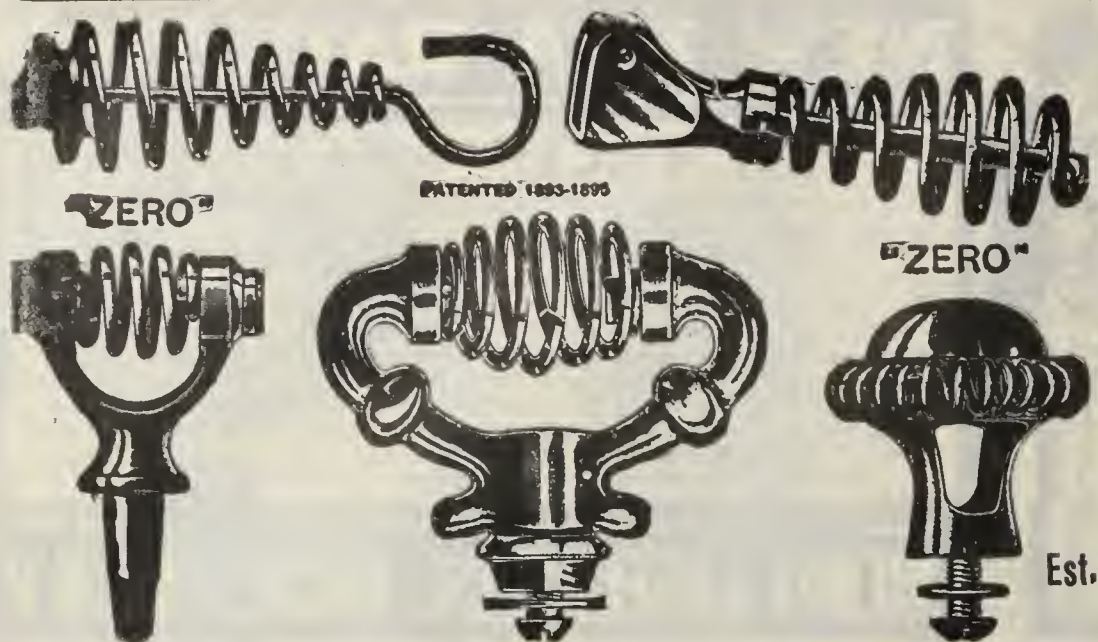
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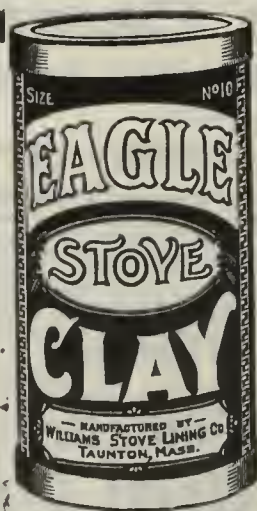
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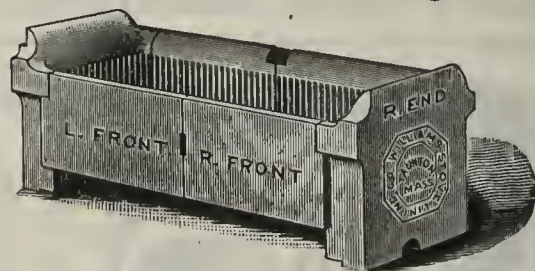
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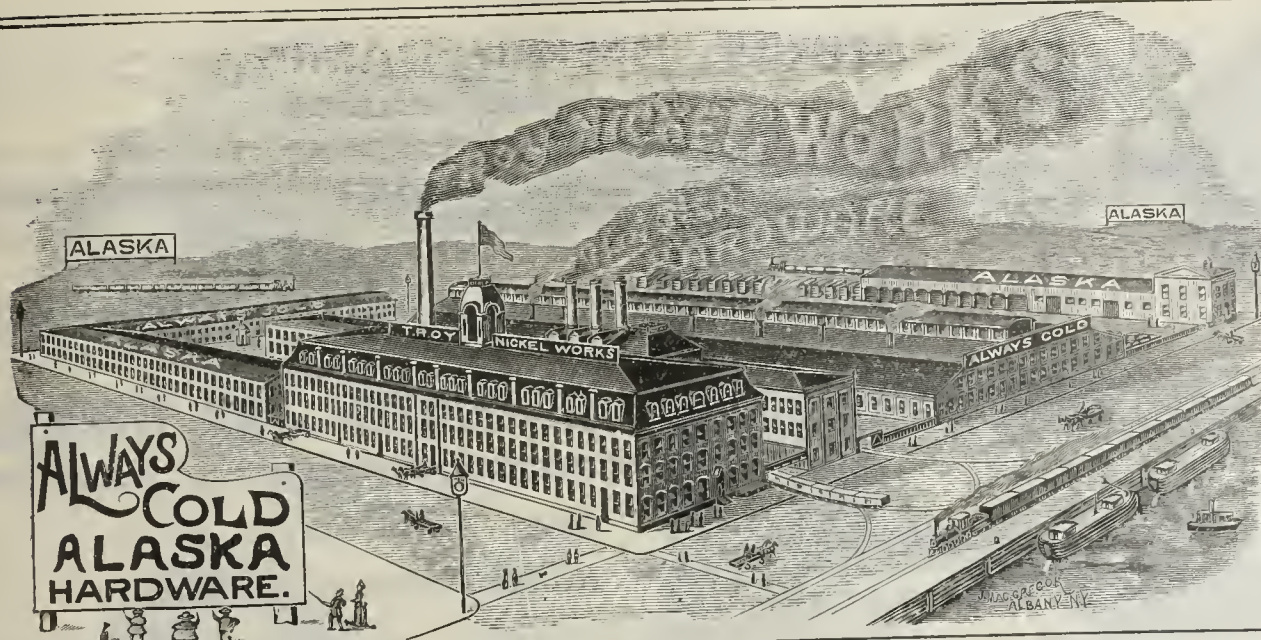
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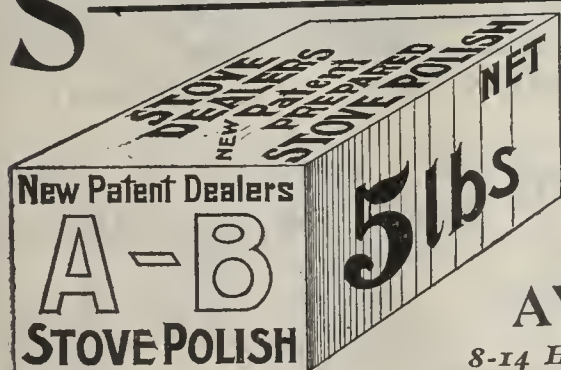
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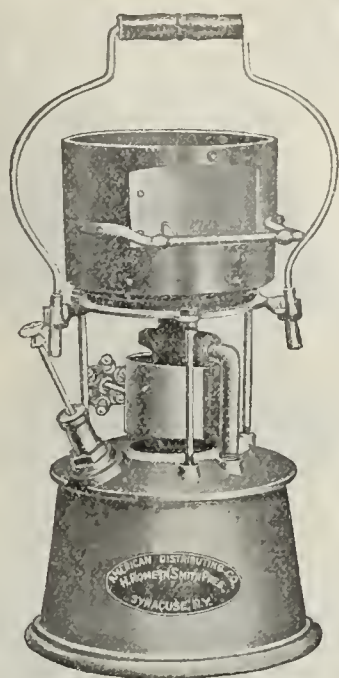
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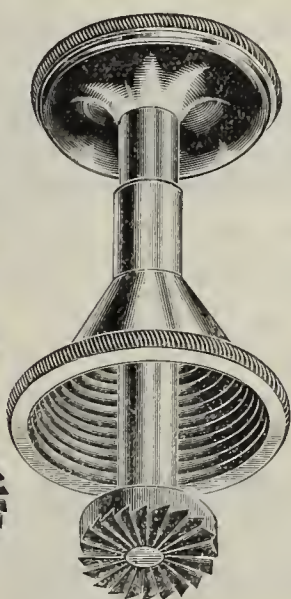
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Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

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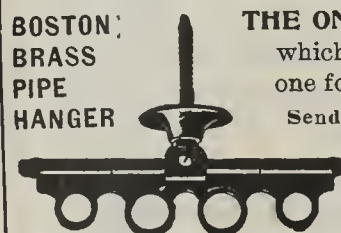
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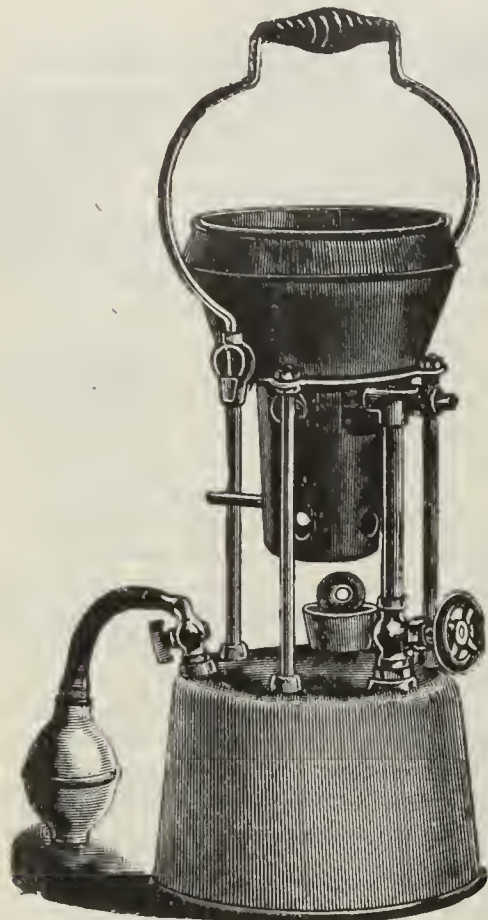
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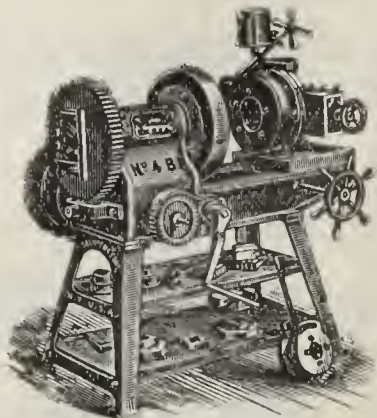
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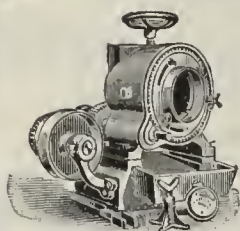
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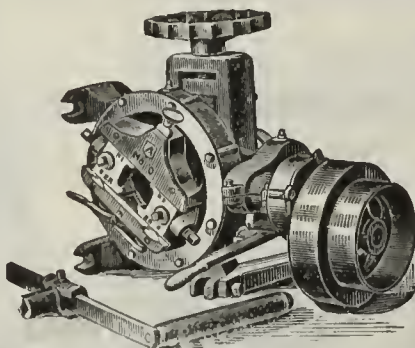
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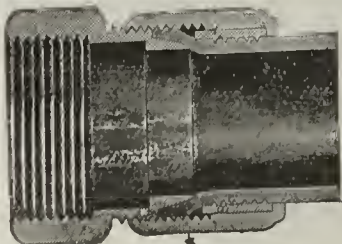
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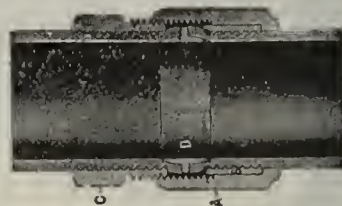
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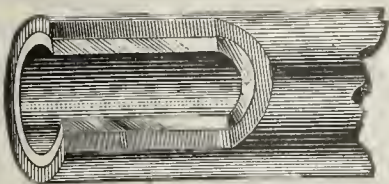
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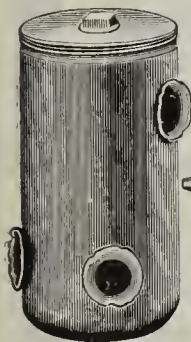
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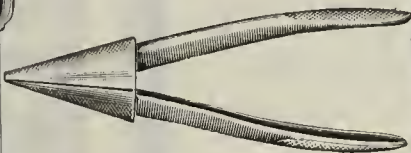
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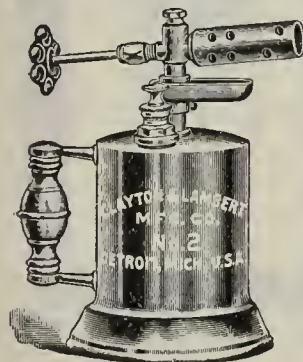
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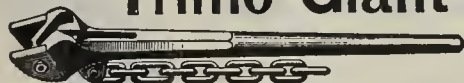
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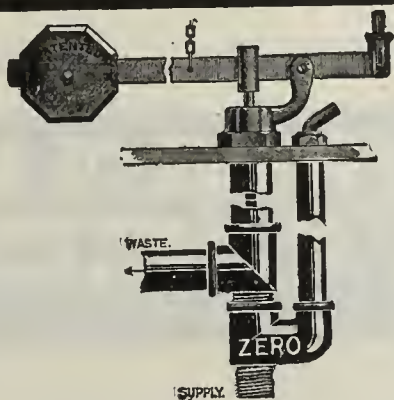
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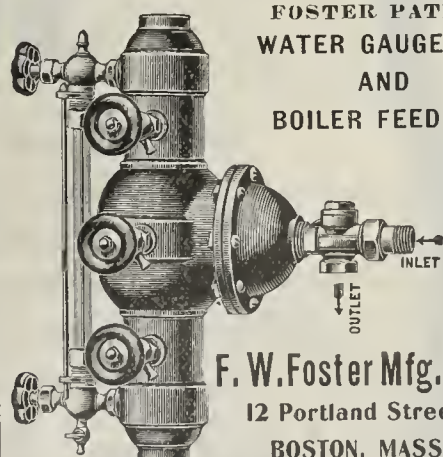
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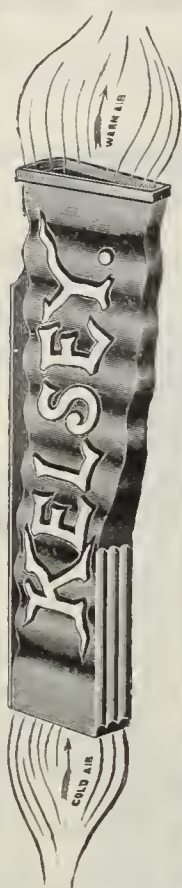
And Many Other Important Things that Good Workmen Must Know.

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232-238 WILLIAM ST., NEW YORK.**FOSTER PATENT WATER GAUGE BOX AND BOILER FEEDER.****F. W. Foster Mfg. Co.,**
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BOSTON, MASS.**PLUMBERS WANTED!**
To Use **ALLBE'S WIPING CLOTHS.**
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15c. 20c. 3 1/2 x 3 1/2 to 4 x 5 15c.
20c. 25c.
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U. S. Stamps taken. Made by
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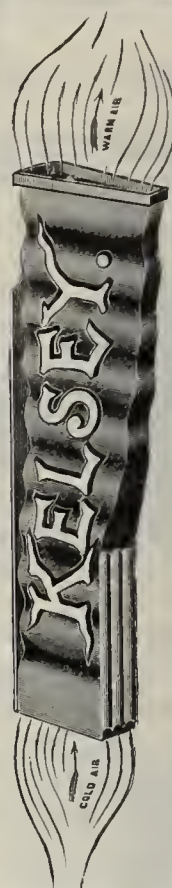


are now being sold and pushed by many leading dealers, to the exclusion of all other heating apparatus, because they afford good, fair profits and give the buyer the best kind of results.

If the agency for your city is not taken, would it not be well to correspond with us at once?

KELSEY Heating is Good Heating.

KELSEY FURNACE CO., Makers.
MAIN OFFICE, | NEW YORK OFFICE,
SYRACUSE, N. Y. | 239 WATER ST.



Royal Enameled Steel Ware

Have you ever handled a more satisfactory line?

Quality better than ever before.

Prompt Shipments. Complete line.

These are the reasons why we hold our trade, and---Continually add new customers to our already large list.

If you are not one of them let us hear from you.

National Enameling and Stamping Co.

BRANCH OFFICES:

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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, December 7, 1901.

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PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
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ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

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For the Consideration of the Stove Trade.

There are increasing evidences of the satisfactory business in stoves which has been done this year. The chances are that the increases shown will surprise many who had been figuring upon droughts, strikes and other deterrents, in addition to the standard complaint that the business "is no good any more." But in estimating the present stove business a distinction has to be made among the various classes of heating and cooking apparatus that are now in use as compared with former periods. A full line of these goods can only be made by a few concerns, and the consequence is that many concerns of long standing find their business growing more limited each year, unless they have been able to keep up with the pace. The variety and assortment of hot air furnaces is rapidly increasing, and no doubt will continue to do so to a much greater extent, from the fact that they can be, and are, made a specialty by people who make furnaces only, and who are sharp competitors for business in their sphere. As for steam and hot water heaters, they have made stoves practically obsolete. Gas stoves, steel ranges, tamale stoves, without counting gasoline and oil stoves, are steadily increasing in use, with the consequence that what was formerly known as "the stove business" has completely changed its character.

While these facts are well understood considerable difference of opinion must prevail regarding the trade, depending upon the assortment of goods a concern may make. The conditions and demands governing the stove trade are growing more sharply defined every year, and both makers and dealers are confronted with the same problem. Manufacturers in various sections who formerly considered themselves safe for life in the possession of their business, but who have failed to keep to the front, now find their business becoming more contracted every year. These are apt to be found complaining that "the trade is all cut to pieces," &c. It does not follow that a large concern has a much more happy future in the stove business than many of the smaller ones. Some of the so-called "small concerns" are, and have been, making excellent goods, and up to the present have been satisfied with their progress. They are usually situated in good local trade centers. They cater to that trade and they get it. This cuts into the territory of many of the larger manufacturers, but there is always a field for the latter to spread out, owing to the greater facilities they possess, as compared with the lesser concerns.

So far as the demand for all kinds of heating and cooking goods is concerned all reports agree that it is good, and no doubt exists that this year will show substantial gains in the sales when the books are finally balanced. What the profits will be can only be determined at the same time. Manufacturers generally realize the necessity of maintaining prices; but there are always some who are unwise enough not to do it. The struggle for business all around is fierce. So it will continue to be, and those who cannot offer goods of the best description and variety will have to follow in the rear as best they can.

The Charleston Exposition.

The opening, on Monday, under favorable auspices, of the South Carolina, Interstate and West Indian Exposition at Charleston, S. C., inaugurated what promises to be a useful and profitable undertaking for the promotion of Southern commerce and industry, particularly in its relation to the West Indian and South American trade. The prime idea of the promoters of the enterprise was the development of this trade, the location of the port of Charleston being peculiarly favorable to the promotion of an important export and import business with the seventy principal West Indian Islands and the east coast ports of South America. The fast growing importance of this field, especially since closer relations have been established with Porto Rico and Cuba, is becoming widely recognized by the business men of this country. The exports from the United States to the West Indies last year were greater than the exports to China, Japan and Asiatic Russia combined, and the quickening of this trade will naturally conduce to the profit not only of the South, but of the entire country. The exposition will also be serviceable in drawing attention to the marked progress that has been made of late in the South, and which is only the beginning of what promises to be a wonderful growth and development in that rich section of the country. No doubt, too, its lighter side will prove highly attractive to the pleasure seeker and tourist, who will be further attracted thither by the genial winter climate of Charleston and the picturesque features of Southern life provided at the fair.

Studying Foreign Business Methods Abroad.

United States Consul Joseph I. Brittain, at Nantes, France, in a recent communication to the State Department, strongly urges the desirability of sending young Americans abroad to acquire a practical business training which will fit them for engaging in foreign trade. The Consul believes that it is just as essential for the American business man to have a knowledge of foreign business methods as for him to be familiar with foreign languages. The plan of sending young men abroad is being followed by European exporters and it has been found to give the best results in the extension of trade in foreign countries. Both our commercial enterprise and progress are acknowledged abroad and we undoubtedly have attained a place in the foremost rank in the commercial world. But the Consul is of the opinion that

we cannot expect to force our crisp and rapid business methods upon the conservative Frenchman. We may gradually convince him of the superiority of our system, but we must in the beginning make certain concessions. Young Americans should, he believes, go to France and obtain employment in some large business establishment for six months, one year, or two years, as the exigencies may require. Salaries are low, but he thinks a good many young Americans could get positions that would at least pay their board, while at the same time they would be obtaining experience of great value. In the city of Nantes, with its 200,000 inhabitants, there is but one man from the United States who is engaged in business, and he is with a retail firm, while a number of young men from Great Britain, Belgium and Switzerland are employed temporarily in the leading importing houses, getting a practical knowledge of the language and of French business methods. The kind of employment that a young man of foreign birth could obtain would be attending to the correspondence from his own country, while at the same time he could study French and obtain an insight into the metric system and French peculiarities in business. This policy is followed by Englishmen, Germans, Frenchmen and others, and there seems to be no good reason why such a successful plan could not be followed by American manufacturers and exporters. It would probably be worth the while of exporting houses to assist in the maintenance of one or two young men while they were abroad. The suggestion is at least worthy of careful consideration.

Success of Instruction by Correspondence.

In a recent celebration of its tenth anniversary the International Correspondence Schools of Scranton, Pa., marked an achievement that is probably unparalleled in educational history. The growth of this now famous institution since its inception as the Correspondence School of Mines in 1891 has been something remarkable. When the schools started no one had any conception of the great success that was to follow the undertaking. In 1891 a small staff of eight persons performed the work that now requires the services of a corps of 2500 people and up to the present time 341,500 students have been enrolled. In other words, the total enrollment membership, with their families, on the basis of five persons to a family, would people a city of nearly two million population. This immense patronage affords a conclusive proof of the fact that the correspondence system of technical education, introduced by the founders of the International Correspondence Schools, has met a wide and distinct need in mechanical and industrial circles, both in this country and abroad, for the operations of the institution now cover Canada and other foreign countries, as well as all the States of the Union. The faith and foresight of its promoters have been abundantly justified by the result. At first the correspondence system of teaching was regarded with considerable skepticism. But as the public became acquainted with the work of the schools and realized the practical results as shown in the success of the students the doubt as to the ability to teach and learn in this way gradually disappeared. Now education by mail is a recognized institution, the efficiency and importance of which is generally admitted. It must be intensely gratifying to the schools to be able to state that thousands of their students are filling important positions in every line of industry and in every quarter of the civilized world. Testimonials show that numbers of their clients have secured higher positions directly through the improve-

ment and advancement in technical knowledge acquired by their correspondence instruction. Many others have been placed in lucrative positions through the agency of the schools. The International Correspondence Schools is an institution which fully merits the support and approval of business men, and all who are interested in the technical and industrial advancement of the country.

Editorial Notes.

We print this week, in another column, a communication from our London correspondent regarding a controversy which has arisen in British tin plate circles regarding the use of the terms "charcoal" and "coke," as applied to tin plates. Under the present methods of manufacture these terms no longer have the significance they originally possessed, all tin plates being made of either Bessemer or Siemens steel. Only a very small portion of the plates now manufactured, either in this country or abroad, are actually made from charcoal iron, although a large proportion of the tin plate product is offered under the name of charcoal plates. The suggestion that in future tin plates should be known either as "Bessemer" or "Siemens" has much to recommend it. It would be an advantage to the trade if these terms were substituted for the old method of nomenclature, for it is admitted that the present way of denominating tin plates is confusing and misleading, and that in many instances coke plates are branded and sold as charcoal. In all departments of trade to-day the tendency is toward the abolition of antique trade terms which have lost their significance and the adoption of new terms which more actually fit the case.

The demand for American anthracite coal in Europe seems to be growing rapidly. So many large foreign orders have been received by the Philadelphia & Reading Coal, Iron & Railroad Company that their capacity to furnish the fuel is becoming overtaxed and they have decided to accept no more foreign business for the present. The strike in the mining districts of France and South Wales, from which places Europe obtains the greater part of its supply of anthracite, has induced many users of hard coal to seek supplies on this side of the water. American consuls on the Continent report the arrival at various European ports of cargoes of anthracite coal, which is delivered at its destination, in many cases at a cheaper rate than the South Wales product can be purchased. For instance, a cargo of anthracite has been delivered in Berlin 49 cents per ton cheaper than the Welsh coal would have cost, and Consul Brittain, at Nantes, France, reports that a leading coal firm in that city had been able to buy American anthracite coal at 50 cents a ton below the cost of Welsh coal, the freight charges on the latter not being taken into consideration. It would appear that a large market for our surplus anthracite product exists in Europe. No doubt American coal operators will take advantage of the opportunity thus opening up.

Postmaster-General Smith, in his annual report, emphasizes the necessity for a rectification by Congress of the abuses which have grown up in connection with the privileges accorded under the present postal law to second class mail matter. Second class matter, the Postmaster-General points out, constitutes nearly three-fifths of the weight of the entire mail of the country, while it pays only one-twenty-eighth part of the postal revenue. As things are at present the Post Office Department is virtually paying a subsidy of \$12,000,000 a year for purely private publishing enterprises. The carrying of this burden prevents the Department from introducing a number of desirable improvements for the postal service which would tend to benefit the public at large.

The Eastern Stove Trade.

Evidently the interest taken in our recent article on the condition of the stove trade in one section of the East has not ceased with the letters presented in our last issue, as a number of further communications referring to the subject have been received. We present below a few more letters from the many which have come to us within the past few days, and trust that the discussion which has been opened up in these columns may result in more harmonious relations in the trade, to the benefit of all alike.

Some of our correspondents, while admitting that our presentation of the conditions was correct, deprecate the fact that it was made at all, taking the position that no benefit could come from giving the stove dealers throughout the country so much information, which, they claim, would be of doubtful interest to the latter. This expression of opinion gives us the opportunity of saying that seldom does any deviation from the rules or agreements of the stove associations remain for any considerable time unknown to the stove dealers, who are found to be men of considerable shrewdness when it comes to the question of being informed as to what is being done by the manufacturers, so as to enable them to buy their stock as cheaply as can competitors who may be looked upon by some manufacturing concerns as worthy of special consideration. Then again, we have the authority of the last Presidential message as to the benefit of publicity for the purpose of protecting general interests.

PRICES TOO LOW IN EASTERN MARKET.

A leading Eastern manufacturer sends us the following:

In a general way, I think what you have said in your article of November 23 is correct touching the Eastern stove trade, and more particularly that of the New York City market and the territory immediately pertaining thereto. Manufacturers located some distance from this territory use it for the purpose of increasing their trade without reference to prices obtained, hoping thus to increase their output and reduce their general ratio of manufacturing expenses. I doubt if any manufacturer could be successful in making money were he to confine himself solely to what would be known as the New York market at present prices.

During the better days of the association which used to meet at the Astor House a general classification of goods and prices was an established fact, and the market was in a comparatively healthy condition. In my opinion, it was broken up by the desire of some manufacturers to increase their output for the purposes above stated. Goods in the New York market, I believe, are being sold at prices at least 10 per cent. less (or even lower) than the same class of goods would bring in the Chicago market; and unless the jealousies which now exist can be smoothed over we must again look, perhaps not for the "survival of the fittest," but the survival of the concern that is willing to make the greatest sacrifices to retain or increase its trade.

ASSOCIATIONS NOT UNQUALIFIEDLY INDORSED.

A manufacturer in the Central West, who, apparently, is not an ardent upholder of the association idea, writes as follows:

Your article on the "Eastern Stove Trade" is timely and in many ways fits the general situation very well. With pig iron and coke rising, steel very scarce and higher in price, and labor independent, we hear of some cases where manufacturers are selling goods at prices that cannot make them a net profit on their business. This, too, at a time when the stove business is good and prices should be very firm or materially advanced.

Up to now our own business exceeds that of any other year, and last month we did the largest business

of any month in our history. We have been and still are very busy, and have not given any attention to association matters. There are always the weak, the mean, the unruly, but a frequent coming together to talk over matters keeps them from becoming worse than they otherwise would be, and this is about as much good as we ever get out of the association business. When it comes to classifying goods and fixing prices it is impossible to suit everybody, and leaks of various kinds are soon discovered, which ends in trouble and the usual row.

ANY ASSOCIATION BETTER THAN NONE.

A representative of one of the larger Western stove manufacturing concerns sends the following interesting communication, in which he registers his approval of associations as a general principle:

I read the recent article in *The Metal Worker*, and by way of comment would say that, to the best of our knowledge, no such conditions as spoken of there exist in the general trade. Of course, you can understand that the Western manufacturers do not come in very close competition, if at all, with Eastern Pennsylvania, New York City and those along the Hudson.

So far as our knowledge goes, the stove trade throughout the West has been in pretty good condition, especially this year. There is, as you undoubtedly know, what is known as the Western Association, which is made up of nearly all the principal stove manufacturers in the West, and they work very harmoniously. Of course, violations are liable to occur in all sorts of associations, unless there is a very heavy forfeit, and even then some members think it is smart to take the chances of not being found out. You know there is an old adage that "You can lock up a thief, but you cannot lock up a liar," and this is the great trouble. When so-called reputable business men agree with their business competitors to do certain things and do not adhere to their agreement, it is sometimes pretty hard to get along.

There exists, as you also undoubtedly know, in New York State the New York State and Northern Pennsylvania Association, which, we understand, works more or less in harmony with what is known as the Pennsylvania Stove Association.

Years ago there existed in the West an association, the agreements of which were very strict, and while there was no forfeit or anything of that kind, this association was very effective. Manufacturers who were members of said association found it very largely to their advantage to adhere to the rules, as they were a great benefit to them.

The net of the whole proposition is that it is a great deal better to associate with a lot of your competitors in such a way that you have some sort of a reasonable knowledge of what they are doing, instead of guessing at it. There are always a lot of so-called business men who seem to think that they are doing good business when they try to cut their prices, with the hope that they will not be found out. Of course, it goes without saying that this sort of thing cannot continue long. Violators of agreements will sooner or later come to grief, and the man who thinks that he can obtain anything but a temporary advantage by cutting his prices is one who, in my opinion, is likely to be badly fooled.

Speaking from an ordinary standpoint, we have always felt that there has been a great benefit derived from almost any kind of associations. Any association is better than none. The associations, as far as our knowledge goes, that exist now do not have any arbitrary rules. They do not attempt to regulate prices or anything of that kind, but simply try to correct ordinary abuses and discuss matters that are of general interest to the trade. Possibly they might be termed as what is commonly known as "a gentlemen's agreement."

A REPORT comes from Pontiac, Mich., that there is a movement on foot for the establishment of a Stove works in that town. It is said that the plans of the promoter include the establishment of a very large works at the South East of the town.

Odin Gas Burners and Heaters.

The Odin Stove Mfg. Company, Erie, Pa., are sending to the trade two circulars that are calculated to attract attention. One, printed on red paper, is devoted to the Tri-Odin three and four way gas burners, designed for use in the fire chambers of cooking stoves. These are made with two burners directly under the cooking holes, and have flames burning from the side, so as to throw a flame against the water front on one side and against the oven on the other, to aid in baking. The company also make circular Tri-Odin burners for use in heating stoves.

The second circular is devoted to the Empire Odin, which is a round gas heating stove made in two sizes, one size having a fire box 15 inches in diameter and standing 50 inches high, and the other a 19-inch fire box and standing 54 inches high. The Empire Odin is spoken of as a strictly pure air gas heater, the fire box being composed entirely of cast iron and having a cast iron tube from 6 to 10 inches in diameter extending from the bottom to the top of the stove, forming a central flue for heating and circulating the air. This air may be taken from the floor of the room or fresh air may be supplied from out of doors. The heater is attractive in appearance, having the fire chamber inclosed in a large illuminating chamber with mica doors all around. The Odin incandescent fuel is placed in the fire chamber and adds to the cheerful effect. The products of combustion, after leaving the fire chamber, pass through a drum and circulate around it five times before they escape to the flue pipe connection near the top of the stove.

Some New Garlands.

Some very pretty circulars which are being sent out by the Michigan Stove Company call attention to the merits of the new Champion-Garland range, intended for using hard coal or wood as a fuel, and to the Sunlight-Garland, a medium priced base burner for anthracite coal. The latter construction is referred to as being entirely new and as the first of the kind ever put upon the market. It is a sheet steel base burner with internal construction similar to the company's well known Art-Garland line, which insures satisfactory operation. Reference is made to the generally admitted fact that sheet iron radiates heat much quicker than cast iron, thus insuring a vast amount of heat with the use of a moderate amount of fuel. The Sunlight-Garland has large fire pot, anti-clinker and center dumping grate, the same as used in the regular Garland line; heavy fire pot and hot air circulating flues, which take the cold air from the floor and discharge it from the top in a highly heated condition.

The new Champion-Garland range is a 6-hole construction with oval shaped fire box, with no corners to become clogged with ashes and impede the draft; aerated oven; direct draft damper under the pipe; extra large pull-out; smooth, solid hearth; capacious ash pan; ventilated Boston ring covers; large broiling door and interchangeable reservoir. The stove is rich in ornamentation and of substantial appearance. All parts are ground and fitted true, giving tight joints and thick plates, thus permitting expansion and contraction with no danger of cracking.

Charles C. Heath & Co.'s Philadelphia Branch.

Chas. C. Heath & Co., manufacturers of and dealers in stoves, ranges, furnaces and supplies, Baltimore and Philadelphia, have leased for a term of years the Colburn Building, 136 and 138 North Second street, Philadelphia, Pa., and will occupy it on January 1 as their Philadelphia branch store, removing at the time from their present location, 63 North Second street. The new building is of brick, five stories high, with 54 feet of frontage on Second street and 70 feet deep. Electric elevators and other conveniences are being installed, and the whole building and its appointments will be modern in every detail. The fourth and fifth floors, we are ad-

vised, will be used as a casting storage department, in connection with a general stove repair trade. Castings of all the Pennsylvania, Maryland and New York makes of stoves are to be kept on hand. The third floor will be used as a shop for the manufacture of furnace castings, hot air pipes and necessary appliances for the general trade. The first and second floors will be devoted to display and sample rooms for the various lines of summer and winter goods. Offices, both general and private, are provided at the rear of the first floor, and the basement is large enough for the storage of ten carloads of stoves. Chas. C. Heath is expected to divide his time between the two stores, and the Philadelphia branch will continue under the management of Henry Swartz.

The company advise us that they will be represented next year by Samuel Snyder, James Kirkland, Cyrus Hatfield and Irving Riggs, who will look after the trade in Maryland, Delaware, Virginia, Pennsylvania, New Jersey and New York.

Death of John F. Mills.

On December 6, at his residence in Port Chester, N. Y., John F. Mills died at the age of 58 years, from abscess of the liver, after a short illness, although his health had not been good for several years. Mr. Mills was a native of Jersey City, N. J., and at the time of his death the vice-president of the stove, boiler and plumbing goods manufacturing house of Abendroth Bros. of New York and Port Chester. As a young man he was a bank clerk in Port Chester, but entered the employ of the Abendroth firm, of which he became a confidential agent and rose to the vice-presidency. He was vice-president of the Port Chester Savings Bank, a warden of St. Peter's Episcopal Church, a member of the village Board of Trustees and of the Harry Howard Hook and Ladder Company. He was also prominent in Masonic circles. In early life Mr. Mills married the daughter of W. P. Abendroth, his wife dying about two years ago. He is survived by four sons.

ODD PLATES.

THE CHARTER OAK STOVE & RANGE COMPANY, St. Louis, Mo., have issued a letter to their friends in the trade calling attention to some very interesting statistics in the way of Stove production. Among other things they state that in the year 1900 they made and shipped more Stoves and Ranges than did their predecessors for a corresponding period, and that up to November 1 they made and shipped more Stoves than during the 12 months of 1900. Up to November 15 they report a gain, as compared with the same period in 1900, of 398 Stoves and Ranges. Unfilled orders now on their files, and those which they can reasonably expect to receive before the close of the year, will, they claim, make their shipments for 1900 reach a grand total of 75,000 Stoves and Ranges. The company express the hope that with increased facilities and advance preparations they will be able next year to give their customers a service more prompt than ever before.

THE ECONOMY FURNACE COMPANY of Cedar Rapids, Iowa, are distributing a 16-page folder in the interest of their Divided Flame Type and Continuous Flame Type of Hot Air Furnaces, which are made in a variety of sizes, some having two tubes run through the combustion chamber to increase the heating surface. The construction all tends to secure a long fire travel and an economical consumption of fuel, at the same time presenting a large amount of heating surface with which the air must come in contact in passing through the Furnace. Six pages are devoted to a series of testimonial letters from those who have used the Furnaces in schools, churches, hospitals, business houses and residences.

"HAVE A LOOK INSIDE," is the inscription on the front and back pages of a four-page folder issued by F. M. Borden & Brother, Philadelphia. The circular calls attention to the fact that the firm are already arranging to present an attractive line of rapid selling goods to

dealers for the coming year, and announces that their catalogue and salesmen will be ready to start visiting them on January 2, 1902. Their line includes Wickless Oil Stoves, Gasoline Stoves, Yellow Flame Stoves, Ovens and Refrigerators.

THE WEIR STOVE COMPANY, Taunton, Mass., had stored at the commencement of the fall trade 6000 Stoves of all kinds, besides their Furnaces. Since then they have been running 75 Stoves and 16 Ranges per day, and up to Saturday last were 200 behind on orders.

"DICK" WARNER of the Stove firm of White, Warner Company, Taunton, Mass., was, on Tuesday, elected Mayor of Taunton by a handsome majority.

WE are informed that the Simpson Stove & Mfg. Company, who will remove their present works from Pittsburgh to Canonsburg, Pa., have drawn plans for a building, 200 x 100 feet, to contain a machine shop among equipment, warerooms and offices. Also a foundry building, 150 x 75 feet, and several small buildings. The plant will be equipped with modern appliances throughout, and is expected to be ready for operation in April or May of next year. The concern are in the market for foundry equipment and gas engines that will develop 100 horse-power. The concern are manufacturers of Gas Ranges and Gas Appliances.

THROUGH the courtesy of President W. G. Withers and Secretary W. F. Habicht of the Pennsylvania Stove Salesmen's Association, *The Metal Worker* is invited to participate in their annual banquet, which will be given in the banqueting room of the Philadelphia Bourse, on Wednesday evening, December 18, when it is expected that a full attendance of the members will be present.

A LARGE sized mailing card is being sent out by the Michigan Stove Company, in which they ask their customers to take time to go carefully over their catalogue and price-list and see if they cannot make up an order for at least samples of some of the Garland productions.

GROUND has been broken for an extension to the Abram Cox Stove Works at Lausdale, Pa.

W. H. COLEBROOK, SONS & Co., Syracuse, N. Y., are sending to the trade a card to which is attached a miniature pipe, with the suggestion, "Put this in your pipe and smoke it." There is a verse about the pipe, but which bears more particularly upon Colebrook's Asbestos Furnace Cement and Stove Putty. The card also gives the address of the Charles Smith Company, 123 Lake street, Chicago, Ill., as the company's Western selling agents, and H. A. Graubery & Co., 413 Central avenue, as their Cincinnati, Ohio, selling agents.

THE "Be Wise" trade-mark of the Gobeille Pattern Company of Cleveland, Ohio, appears embossed in gilt at the top of a card printed in old English type, with the words: "We design and make Patterns for Stoves and Ranges, simple and cheap to manufacture, quietly elegant in appearance. We request your consideration."

WE are advised by the H. Adler Company, Pittsburgh, Pa., that they have engaged M. J. Weldon, formerly with the Pittsburgh Stove & Range Company, to represent their interests in Western New York, Ohio and Indiana.

THE UNION STOVE REPAIR COMPANY, 2852 and 2854 Archer avenue, Chicago, Ill., are sending out leaflets advertising their King brand of Stove Putty for cementing joints in Stoves and Furnaces, and their King brand of Asbestos Furnace Cement. This Cement is composed of asbestos materials and is claimed to be fire and acid proof. It is recommended for the mounting and cementing of joints and seams in Furnaces, Heaters, Ranges and Stoves, making them gas tight. The Cement is claimed to harden quickly and adhere firmly to anything. It is odorless and contains no oil.

THE TURNER BRASS WORKS, Chicago, Ill., are issuing circulars describing the Turner Vapor Lamp, and giving *fac-simile* testimonials from parties in different sections of the country who have used the Lamps with satisfaction. One of the circulars presents a view of the company's new factory building, with its 56,000 square feet of floor space.

Washington Hardware Association.

As noted in the report of the annual meeting of the Western Washington Hardware Association in our last issue, it was decided to enlarge the scope of the organization, and the name was changed to that of the Washington Hardware Association. While this was designated as the third annual meeting of the association, the term is somewhat misleading, as the organization is but 18 months in existence, the first convention having been held on April 19, and the second convention on November 14, 1900. At the meeting held a year ago the secretary reported that they had doubled their membership in seven months, and expressed the hope that they would double it again during 1901. This they failed to do, the membership being increased by 12, making the total 47 at the time of the recent meeting. This, however, was regarded as a very healthy growth for an 18 months old organization, as there are less than 90 Hardware merchants in Western Washington, so that more than half of them have already affiliated with the association.

Mr. Reckers, the secretary, in his annual report referred to the good work done through the local organizations in Seattle and Tacoma in the matter of price agreements and overcoming trade abuses. The local jobbers were ready to pledge themselves to give the smaller towns the same support as they had the merchants in the two larger cities, if local organizations were formed.

Mr. Mohr, in his presidential address, referred to the great object of the association as to cultivate a more fraternal feeling and hearty co-operation among Hardware merchants. He said that when merchants act upon the theory that their competitors are as honest as themselves and have the same lofty purposes in view, they will have learned a valuable lesson. He desired to impress every merchant in the State with the importance of association work as he felt it, and expressed the hope that the day would soon come when all, or nearly all, of the legitimate Hardwaremen of Washington would be affiliated with the association.

Chicago Retail Hardware Association.

At the last regular meeting of the Chicago Retail Hardware Association the Buying Committee reported the quotations they had received on Wire Cloth, Wire Goods, Garden Hose, Gasoline Stoves, &c., and estimates were given by the members present as to the quantities of these goods they would require to meet their wants for the coming season.

In the November issue of the "Bulletin" published by the association, under the heading of "Grievances," appears the following:

We have been having some correspondence with the _____ with regard to their alleged selling direct to consumers. The matter will be fully entered into at our coming meeting. We earnestly hope that this matter may be adjusted satisfactorily to all parties concerned, as it is not the policy of this association to treat any wholesale house that will give us as retail Hardware merchants fair treatment other than in a friendly manner.

Our Grievance Committee has in hand a complaint by one of our members against one of the jobbing houses of this city for persistently selling to our members' customers. If we as retailers expect to continue doing the retail Hardware business of Chicago it will be necessary to oppose this custom of the several Hardware jobbers and manufacturers attending to this retail business for us.

Some years ago some of the wholesale houses occasionally nibbled at an order from a consumer—cautiously of course. This branch of their trade has been spreading out much more than most of us realize. It will not do to ignore this condition of affairs and some step on our part is absolutely necessary. The longer we postpone this action just so much harder the problem will be. We are receiving the excuse from offending parties that they are doing a retail business, not because they like it, but because the other jobbers are retailing. Now we all know that this is not the fact, and we should not entertain such an argument for a moment.

Under the head of "State Association Notes" is the following reference to a complaint which is awaiting adjustment:

The Investigating Committee of the Illinois Retail Hardware Dealers' Association has in process of adjustment a complaint made by one of the members residing in Springfield. This Springfield member had purchased Gasoline Stoves for several years past, and claims that he purchased his line this year on the same terms as he had done in the past—that is, that he had been the exclusive agent in Springfield for that line of goods. He also claims that the manufacturer sold a large bill of the same class of goods under the same name to a department store in Springfield, after having taken complainant's order. Furthermore, that the offending party sold the goods at a much lower price to the department store. Furthermore, that the party offending refused to adjust the matter in any way. Later on the complainant requested permission to return his Stoves or to be made a rebate on his Stoves, placing him in a position to meet the competition of the department store. All of these requests were steadfastly refused, the manufacturer insisting on payment of his Stoves at prices agreed upon when the goods were purchased, the manufacturer also maintaining that he had made no agreement as to exclusive agency with the retailer making the complaint. Final adjustment of this matter will probably not be made until the next annual meeting of the Illinois Association, when both sides should be heard so that all of the facts may be brought out satisfactorily, &c.

Indiana Retail Hardware Dealers' Association.

M. L. Corey, Argos, Ind., secretary and treasurer of the Indiana Retail Hardware Dealers' Association, has issued the following circular under date November 30, in which announcement is made of the time and place of the next annual meeting, together with some remarks concerning the work of the association and what has been accomplished through its efforts:

The next meeting of the Indiana Retail Hardware Dealers' Association will be held in Indianapolis, February 19 and 20, 1902. Headquarters at the Hotel Denison. This meeting promises to be the best and largest in our history. We expect to profit by past experience in arranging programme and discussions to the extent that no dealer who is progressive can afford to stay away. The social feature will not be neglected, but this year the entertaining will be done by the association without asking outside aid.

We have received about 50 applications recently, and the feeling expressed by dealers of our State who are not yet members shows they are interested and appreciate our efforts. We ask every one expecting to attend and join us at our meeting to write the secretary at once, so that proper arrangements can be made.

Quite a number of complaints have been filed this term, but nearly all have been satisfactorily adjusted. Present conditions show more harmony between jobbers and dealers than heretofore. Jobbers are respecting our rights and grounds (with a very few exceptions), and find they gain by adopting this course.

Some trade papers claim that dealers are buying more from manufacturers direct than heretofore. This may be true in some places, but the contrary generally prevails. Some goods (specialties particularly) always will be bought direct from manufacturers, because as a rule jobbers cannot guarantee an exclusive vicinity sale contract. The jobber that caters to dealers only, and is not enjoying a good business, must look for some other cause for the difficulty.

There are still a few jobbers who do not deserve our patronage. Their course demoralizes our business, and encourages undue and illegitimate competition. They solicit the jeweler, druggist, grocer, department store, mill man, blacksmith, lumberman, contractor and even the consumer, and then expect the retail dealer to buy of them. A more absurd proposition would be hard to name, yet some dealers patronize them knowing the conditions.

Again, we have a class of so-called wholesale and retail people who use jobbers' rating in obtaining lower prices, abusing the privilege to dispose of surplus stock. Very often the latter class are our worst price cutters. When the consumer states he

wants to see "Jones before he buys" their regular statement is, "He can't sell at this figure; why he buys of us." The Lindsay Hardware Company recently announced their policy in a booklet sent out to the trade. They say: "We will not sell to contractors, blacksmiths or consumers of any kind under any circumstances. We do not try to get your customers, but will rather help you to keep them. We do everything we possibly can to protect the retailer. We do a wholesale business, nothing else." This statement every association member must approve.

We believe there is a more general disposition to act fairly—to sell better goods on a profitable basis, to assist each other in supplying the entire wants of the consumer instead of allowing this trade to go to mail order houses or bogus bargain leader concerns. There is a more friendly feeling and better understanding between competitors than ever existed before, and we welcome and encourage it all, for to this end associated effort has been directed.

CHRISTMAS IN THE STOVE AND TIN SHOP.

BY SUGGESTION.

With the permission of the editor I would like to give a hint to men who run the smaller stove and tin shops throughout the country, which may help them to get a little more profit out of the approaching holiday season. There is no reason why young America should not make the tin shop as much talked of as some of the other toy stores at this time of the year, if the proprietor is only enterprising enough to cater to their amusement and not consider it a bother to give the youngsters the attention which they need.

The old folks may not be delighted with the fact that Christmas, like the Fourth of July, is most enjoyed when accompanied by considerable noise. To the stove and tin shop belongs the right to sell the penny tin whistles and tin fifes, to say nothing about the tin horns of various sizes, which are made use of during the holiday season and for ushering in the new year. I would suggest trimming the window for the benefit of the little fellows. The proprietor can easily get a large card and paste on strips of red and blue paper across one-third of the card at each end, so as to make stripes of red, white and blue. On this card he should fasten, in the shape of a star, appropriate for the Christmas season, small, round tin whistles with a hole through the center, with the price conspicuously marked. If he then hangs penny trumpets, 5-centers, tin horns and "grandad" horns all around the card and window he will only have occasion to open his store door when school lets out and blow a few blasts on a "grandad" horn to attract attention to his show window. Now this part is purely for the benefit of the youngsters; but, if he has any of the Yankee shrewdness, which every American ought to possess, he will ask the youngsters who come in if they do not need at home a new pudding pan, sauce pan, dripping pan, parlor stove, or some other thing, while he is making a sale to them.

It will be unpardonable neglect if he does not have for the little girls, who are sure to watch the boys, some little dust pans, patty pans, teakettles, doll wash basins and such things as will add to the pleasure of their acquaintance with the shop and that will contribute much to their solid comfort when they become real housekeepers. Such stock costs very little, and the sale of it, even with little or no profit, will be a big advertisement. If he has any pretty little circulars of parlor stoves, kitchen ranges, or a special Christmas circular devoted to other goods to distribute when he is making these sales he will find that there is profit in paying some attention to a branch of Christmas trade that may have heretofore escaped his notice.

I make this suggestion because I know that many stove men get into the habit of thinking that the business of the year is pretty well over at this season and do not make any considerable specialty of catering for Christmas trade. Many men make a commendable use of their time in getting their books into shape and the bills made out for the first of the year. This they ought to do, for the sooner the bills are out and distributed the more likely they are to be paid. Instead of the holi-

day season being a dull time for trade the man in business for himself ought to be working double time in his business, besides putting in a little extra time for the benefit of his family. He will find an increased enjoyment in the extra time if the period spent in taking care of his business and getting his bills out is utilized industriously, intelligently and by all means in a happy frame of mind, so as to make all who come in contact with him feel that there is some pleasure in his acquaintance, even if he does present a bill for the old account, long overdue.

The National Enameling & Stamping Company's Fire.

The fire on the night of the 27th ult. which totally destroyed the entire plant of the National Enameling & Stamping Company, located on the site bounded by Metropolitan, Bedford and Driggs avenues and North First street, Brooklyn, N. Y., will not embarrass the company in executing orders for goods. The trade sending in orders the day after Thanksgiving were not delayed 24 hours in shipments, we are advised, owing to the proximity of their two plants, one on North Third street, nearby, and the Berlin Works at Laurel Hill, Long Island, a suburb of Brooklyn, aside from other comparatively nearby factories at Portland, Conn., and Baltimore, Md., from which to draw. The destruction was total, the loss, however, being fully covered by insurance. How the fire occurred is not known, the gray haired watchman, with his lantern over his arm and accompanied by his dog, being found in the ruins burned so as to be almost unrecognizable. Whether or not the works will be rebuilt on the old site has not been determined.

The Star Enameling & Stamping Company.

In a letter received from C. E. Christman, president of the reorganized Star Enameling & Stamping Company of Pittsburgh, Pa., he informs us that he and his associates have purchased from the Pennsylvania Trust Company, receivers for the old concern, successors to the Star Dinner Pail Company, all of the company's assets, except the book accounts. They have been incorporated under the laws of New Jersey with a capital stock of \$100,000. A directors' meeting was held recently at the offices of the company in Allegheny, Pa., when the following officers were elected: President and general manager, C. E. Christman; vice-president, J. Roth; treasurer, A. F. Loch; secretary, George W. Rowbottom, Jr. The new company are arranging to give the plant a modern equipment, which will largely increase its facilities. The factory was put in operation on November 18, and the demand for their goods has been so large that it has been necessary to run a day and a night shift of hands. The company's plant will remain at its present location in Allegheny, there being no truth in the report that it will be removed to McKeesport.

Stove and Hardware Dealers.

HIBBARD HARDWARE COMPANY have succeeded C. B. Cruwell & Co., in the Hardware, Stove, Tinware and Sporting Goods business in Oskaloosa, Iowa. The new firm have made a number of improvements in the establishment, including new front and shelving.

S. B. COLVIN has succeeded Colvin & Mechling, dealers in Hardware, Stoves, Farm Implements, &c., Mt. Pleasant, Pa.

LOCKWOOD & PALMER, Stamford, Conn., are erecting a modern three-story brick and iron building, 66½ x 85 feet, all of which they will devote to their business of Hardware, Stoves and House Furnishing Goods. The building will be up to date in all its appointments, and they expect to take possession about January 1.

HINES & VOPALENSKY is the style of a new Hardware firm at Morse Bluff, Neb. They are dealers in Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods, of which a good stock is carried.

MITCHELL & TRIMBLE have recently engaged in business in Apache, O. T., handling Shelf Hardware, Tinware, Stoves, Farm Implements, Harness, &c. They occupy a building 24 x 80 feet and have a warehouse, 24 x 40 feet, in course of erection.

DEVANEY & SON are a new firm in Cascade, Iowa, carrying a line embracing Shelf and Heavy Hardware, Tinware, Sporting Goods, &c. They make a specialty of Furnace work and plumbing.

E. T. SMITH HARDWARE & FURNITURE COMPANY, Arcadia, Fla., have lately incorporated with a capital stock of \$50,000, to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, furniture, &c. The company have recently completed quite a large addition to their former establishment.

BALDWIN REFRIGERATOR COMPANY, Burlington, Vt., have published a new catalogue showing the Baldwin line of Refrigerators for 1902. The company state that they manufacture about 140 styles and sizes in hard wood and soft wood, metal, porcelain and spruce lined.

J. C. SHANNON & SON, who have conducted a general Hardware, Plumbing and Seed store in Penn Yan, N. Y., for many years, have disposed of their Hardware and Plumbing business to Peck & Co., who have Hardware stores in Corning, Bath, Plattsburg and other places, making a total of seven stores under their management. Peck & Co. will take possession of the Penn Yan store about the middle of January.

WE take pleasure in acknowledging the receipt of an invitation to attend the second annual banquet of the San Francisco and Oakland Retail Hardware Dealers' Association, to be held at the Maison Tortoni, San Francisco, on Friday, December 6. The association has arranged to bring together at this banquet as many as possible of the local Hardware merchants, both jobbers and retailers, and an interesting and enjoyable evening is looked for.

THE HUMPHREYS-DAVIDSON HARDWARE COMPANY, Wytheville, Va., will open about January 1 an up to date Hardware store. They will carry in stock a full line of Shelf and Heavy Hardware, also Stoves and Agricultural Implements. The officers of the company are as follows: M. H. Davidson, late of Roanoke, president; H. O. Humphreys, late of Bedford City, vice-president; W. S. Humphreys, late of Bedford City, secretary and treasurer.

REFERENCE was made in our last issue to a conference called by the Monongahela Valley Retail Hardware Dealers' Association, to which the Hardware merchants of that State have been invited. We are, however, advised by J. F. Frye, Charleroi, Pa., secretary of the association, that the date of the meeting has been changed to Thursday, December 12. The Monongahela House, Pittsburgh, will be the scene of the gathering.

C. F. MYERS has succeeded to the business formerly conducted under the style of E. J. Post & Co., Albuquerque, N. M. Mr. Myers clerked for 12 years for a Hardware house in St. Louis before coming to Albuquerque, and entered the employ of E. J. Post & Co. in 1889. He was admitted to an interest in the firm on January 1, 1891. Since 1894 Mr. Myers has had full charge of the business, Mr. Post having retired from active participation. A wholesale and retail trade is done, principally wholesale, in Hardware, Shelf and Heavy, Stoves, Tinware, Farming Implements, Sporting Goods, &c.

LEE & POLLOCK have purchased the Hardware, Stove, Farm Implement, Harness, Buggy and Wagon business of A. F. Schofield, Collinsville, Ind. Ter., and will continue at the old stand.

M. J. SHOWERS has lately embarked in business in Apache, Oklahoma. His line comprises Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c.

THE Executive Committee of the Illinois Retail Hardware Dealers' Association will meet in Decatur at an early date to make final arrangements for the annual meeting, to be held some time in February next.

The Waukesha Sheet Steel Company

Illustrations are presented herewith of the new sheet steel works of the Waukesha Sheet Steel Company, located at Waukesha, Wis. Instead of investing considerable capital in the erection of the necessary buildings the company leased the buildings formerly used as repair shops and recently vacated by the Wisconsin Central Railway Company. The buildings were admirably adapted for the purpose to which they have been put, requiring but slight alterations and additions. The latest developments in sheet rolling practice were adopted in the selection of machinery and other equipment, so that the works can be referred to as a thoroughly modern six-mill plant, with all that is necessary for turning out from 75 to 100 tons of steel sheets daily. The company will manufacture steel sheets, black and galvanized, plain and painted, flat and corrugated.

The main building is 120 x 375 feet, constructed of

plunger pumps. The entire equipment is automatically arranged and everything necessary for decreasing the cost of operations has been introduced.

The machine shop is housed in a brick building 40 x 60 feet, with slate roof, and is thoroughly equipped with all necessary modern tools, including drills, planers, lathes, &c., all of which are operated by electric motor. A blacksmith shop adjoins the machine shop.

The electrical equipment is furnished by the Northern Electric Company of Madison, Wis., and consists of one 150-kw. dynamo, driven by a Brown-Corliss 20 x 40 inch 250 horse-power engine. Steam is furnished for this equipment by a special battery of boilers. The dynamo furnishes power to operate all the machinery in the plant with the exception of that operated from the main engine. The building containing the electrical power plant is of brick, 60 x 150 feet.

The galvanizing department occupies a brick building 80 x 240 feet. In addition to the galvanizing tanks

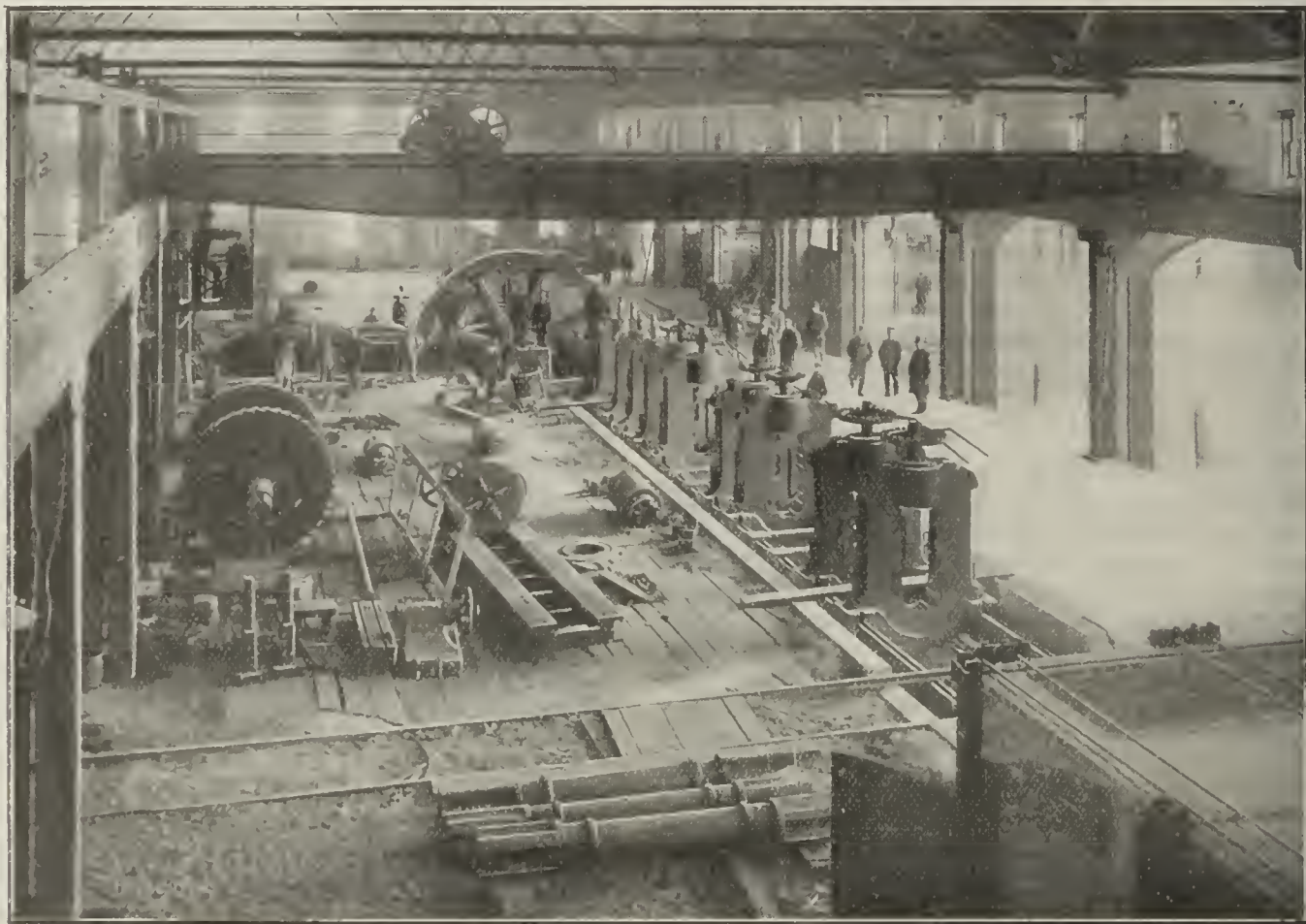


Fig. 1.—The Waukesha Sheet Steel Company.

brick throughout, and has a steel trussed roof covered with slate. This building contains six hot mills, two cold mills and one 24-inch bar mill. The hot mills comprise three 26, one 28, one 30 and one 32 inch. A 1500 horse-power 30 x 60 inch engine, having an 80-ton fly wheel, is installed in this building to operate the mills, as well as sufficient finishing shears for squaring the sheets and bar mill shears for cutting the bars to the proper length. All the shears are operated by electric motors. A 15-ton electric traveling crane, having a 60-foot span, built by Pawling & Harnischfeger, Milwaukee, Wis., traverses a runway over the engine, roll trains, &c. A 60 x 300 foot lean-to, which adjoins the building, contains two bar mill heating furnaces, six sheet and pair furnaces and two double annealing furnaces.

The boiler house is a brick structure, 90 x 100 feet, equipped with Lynn type vertical water tube boilers, manufactured by the Tudor Boiler Mfg. Company, Cincinnati, Ohio. This battery of boilers is operated by automatic stokers, made and installed by the Green Engineering Company of Chicago, Ill. The feed water and purifier is operated by a Cookson heater, made by the Bates Machine Company of Joliet, Ill. The boiler house also contains two large size Deane outside packed

this building contains the shipping room. Another building is the stock house, 100 x 160 feet. Switches from the Wisconsin Central Railway run into the plant, and ample track facilities are provided for loading and unloading as many cars as may be required.

The company have completed arrangements to install two 50-ton basic open hearth furnaces, as well as a puddling department, to furnish their steel and iron bars.

A two-story building, 50 x 60 feet, is in process of erection, which will be used for office purposes. The officers of the company are: President, F. J. Patterson; vice-president and general manager, J. E. Jones; secretary and treasurer, Geo. Firmenich. The company also maintain an office in Chicago, located in room 1403, Masonic Temple.

THE CURTIS STEEL SHEET & CORRUGATING COMPANY, Zanesville, Ohio, will have two more Sheet mills completed and in operation before the end of the year, which, in addition to the two mills recently started will give them a four-mill plant. The company removed the Curtis Steel Roofing Company's plant from Niles to Zanesville, and will use the bulk of the product of their Sheet mills in their corrugating department.

A BRITISH TIN PLATE CONTROVERSY.

[FROM OUR LONDON CORRESPONDENT.]

LONDON, November 26, 1901.—A controversy of some importance to the tin plate trade in the United Kingdom has been started by a prominent Birmingham merchant, T. W. Petersen. At a recent meeting of the Birmingham Chamber of Commerce he explained that years ago there were two kinds of tin plate made and exported from this country. These were known as coke plates and charcoal plates from the process of manufacture. They were then made of iron, but now the denominations are absolutely misleading, because they are now made of Bessemer or Siemens-Martin steel, thinly or thickly coated with tin, according to the quality. The mischief that is now being done lies in the fact that, in

quote for what are known as genuine charcoal plates, when, we need hardly say, we lose all orders, as some of our competitors lend themselves to the above practices, which we will not countenance. We certainly think that the Chambers of Commerce are the right and proper parties to take this matter up, and we think the only way to decide the matter is to designate the plates as either Bessemer or Siemens-Martin tin plates, and that, where an extra tinning is required, the plates should be sold upon the sample, as, of course, there are endless thicknesses of tin coating, which makes it impossible to represent the plates under the terms "coke" and "charcoal." There are dozens of kinds of so-called cokes, and still more of charcoal, all different in appearance, either from the mode of manufacture or the thickness of the tin on the plates. We find, as a rule, that those who sell so-called cheap charcoal plates do not charge more than 1 shilling 3 pence to 1 shilling 6 pence per box over coke price. But, of course, you can go

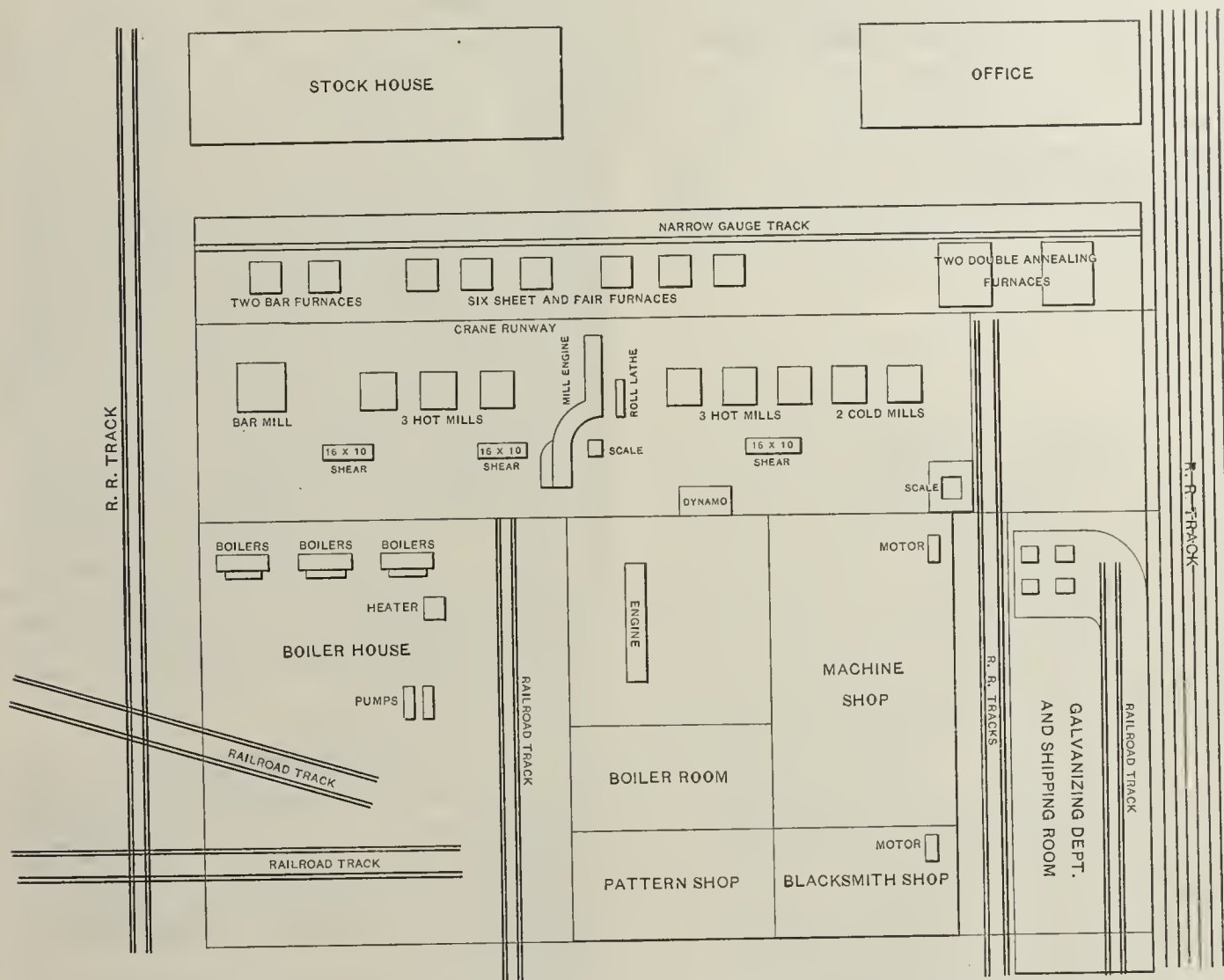


Fig. 2.—Ground Plan.

foreign countries, unprincipled dealers sell under the denomination "charcoal" common steel plates, which are heavily coated, and thereby mislead the buyers. In reply to inquiries from foreign countries, English manufacturers have quoted for Siemens-Martin, and then came a competitor who quoted for common plates made of Bessemer steel, which were heavier coated, and the former were undersold. His contention was that the denomination of "charcoal" or "coke" ought to be altered to Bessemer or Siemens-Martin.

It was decided to communicate with the Newport, Cardiff and Swansea Chambers of Commerce with reference to Mr. Petersen's final suggestion. Serious objection, however, has been taken in certain quarters to Mr. Petersen's charge, which really amounts to one of false description. Mr. Petersen, however, seems to have fortified himself with the opinions of his fellow merchants. For example, a London broker writes to him as follows:

As a matter of principle, we entirely agree with you. We may add that we ourselves are occasionally asked for coke tin plates to be marked charcoal; but, as we never lend ourselves to these practices, we simply

considerably higher, the quantity of tin governing the price. The quantity of tin put on ordinary coke plates is about 2½ pounds per box, for common charcoal about 3½ pounds. There is not the slightest doubt that the introduction of steel has entirely upset the tin plate trade, and the honest dealer or merchant is entirely knocked out of it, unless he can sell his plates upon sample. We will endeavor to take the matter up with some leading parties interested in the trade, and if we can help the matter forward further, it will give us much pleasure.

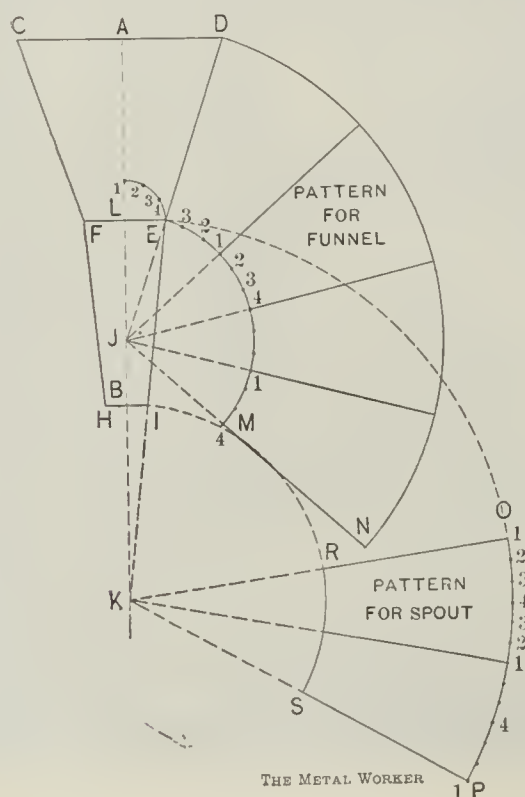
This London firm are certainly in earnest in the matter, for they have gone further and consulted their fellow merchants, with the result that in a later letter they write as follows:

We have brought the matter before the Masters' Association of Wales, and we have hopes that they will take the matter up earnestly and find some solution of the present difficulties. Others have taken the same steps, and we hope from the combined movement some good may come in the future. We hope that you are also taking the matter up with your Chamber of Commerce, as it will be by agitation all round that we may hope to effect an improvement in the interest of the honest dealer.

As to the sale of spurious quantities of tin plates, it must be borne in mind that it is not so much the difference in price, which may only be 5 or 6 cents; it is in the amount of tin coating that the real difference comes in. A genuine coke tin plate, even if heavier coated than usual, cannot be substituted for a genuine charcoal, inasmuch as on account of being harder it cannot be used for work where a charcoal plate is essential. Bessemer steel, to a certain extent, would answer purposes where Siemens is asked for. The point of the charge seems to be, therefore, not so much in the name as in the fact that the Bessemer plates were often heavier coated than common coke, and then sold as charcoal. The sum total seems to be that tin plates should be stamped and marked according to what they really are.

Pattern for Funnel and Spout.

The accompanying illustration shows how to lay out the patterns for a funnel with spout, the drawing being made to avoid unnecessary lines and to simplify the work as much as possible. Draw the center line A B, extending it indefinitely toward K; next draw the elevation of the funnel, making A D or A C equal to one-half of the top diameter, A L the straight height and L E or



Pattern for Funnel and Spout.

L F one-half of the bottom diameter. Then make L B the straight height of the spout and B I or B H the one-half diameter of the bottom. In practice the one-half elevation A C F H B can be omitted. Now extend the slant lines D E of the funnel and E I of the spout until they intersect the center line of the funnel A K at J and K respectively. Now with L as center and L E as radius describe the quarter plan on the line F E, as shown by E 1, which divide into equal spaces, as shown by the small figures 1 to 4. Then for the pattern for the funnel use J as center, and, with radii equal to J E and J D, describe the arcs E M and D N. Now set the dividers equal to the spaces in the quarter plan, and step off four times this amount on the arc E M, as shown. From J draw a line to M, extending it until it intersects the arc D N at N. Draw radial lines through the arcs at the quarter divisions, as shown. Then will D N M E be the full pattern for the funnel minus edges. If the pattern was desired in quarters or halves cut as desired on the lines shown in pattern.

In precisely the same manner obtain the pattern for the spout using K as center and K I and K E as radii with which strike the arcs O P and R S, as shown. Then lay off on the arc O P four times the amount of spaces in the quarter plan 1 E L, all as shown.

N. & G. Taylor Company's Extensions.

N. & G. Taylor Company of Philadelphia, Pa., are making extensive additions and improvements to their works. They are building another mill at Cumberland, Md., which will give them eight mills. They also have other improvements in contemplation there. At their tin plate works in Philadelphia they are making extensive alterations and building a very large warehouse, fully equipped with electrical elevators for the rapid handling of their product. The box department and the black plate department are also being enlarged and another story added to this building. They are also enlarging their smelting works to meet the great demand for their fine makes of solder, babbitt metals, &c.

The Maryland Sheet Steel Company.

As reported in our last issue, the Maryland Sheet Steel Company have been organized and have purchased from the Crucible Steel Company of America the plant formerly operated by the Cumberland Steel & Tin Plate Company, at Cumberland, Md. The crucible steel portion of the plant will be dismantled. The remainder of the plant will be operated. The equipment consists of a 15-ton open hearth steel furnace, a 16-inch three-high sheet bar mill and four sheet mills, two with rolls 40 inches long, and two with rolls 56 inches long, all being 26 inches in diameter. It is the intention to make open hearth steel, casting small ingots and rolling them into slabs on the bar mill for the sheet mills, which will produce heavy gauge sheets, from 9 to 18 gauge. There is a forging plant of five hammers, which will also be operated. The company have a paid up capital stock of \$100,000, which covers the purchase price of the plant. The directors are A. F. Baumgarten, H. H. Dickey, H. E. Weber, H. E. Henderson and Nathan A. Taylor. Mr. Baumgarten has an office in the Park Building, Pittsburgh, which will probably be the sales office of the company. H. H. Dickey is one of the former owners of the plant, and Nathan A. Taylor is of N. & G. Taylor Company, Philadelphia, whose black plate plant adjoins the company's plant.

FLASHINGS.

CHARLES MCSHERRY of Marlin & Co., Pittsburgh, Pa., is about to embark in the manufacture of Sheet Metal Working Machinery. It is stated that Mr. McSherry will secure a building in Pittsburgh and equip it with the latest improved machinery for the manufacture of the Hercules Shears and a full line of Sheet Metal Working Machinery.

It is reported that the officials of the Newport Rolling Mill at Newport, Ky., have refused several offers for the removal of their plant to other points. The company have been increasing their facilities at Newport and contemplate further extensions of both buildings and machinery. Among the possibilities of the future is the erection of a Steel mill for the production of the raw material with which to manufacture the company's product of Sheets.

THE CINCINNATI PUNCH & SHEAR COMPANY, Cincinnati, Ohio, formerly the Wais & Roos Punch & Shear Company, have received a large order for Sheet Metal Working Machinery from Hawaii. They have recently made shipments of their Machines to South Africa and Australia.

THE NEW PROCESS GALVANIZING COMPANY of Niles, Ohio, recently taken over by the Youngstown Iron, Sheet and Tube Company of Youngstown, will continue to be operated at the old location until the spring, when the plant will be removed to Youngstown.

The business of the International Metal Lath Company of Niles, Ohio, has been growing so rapidly that the company will soon find it necessary to erect additional buildings for the accommodation of their trade. They have recently completed the installation of a new 44-ton expanding machine at their works.

THE WAUKESHA SHEET STEEL COMPANY of Waukesha,

Wls., have placed three new Sheet mills and their galvanizing plant in operation. Three tin mills and a Tin house will be started early in January.

THE CARNAHAN TIN PLATE & SHEET COMPANY, Canton, Ohio, have not fully decided to build a Steel plant in connection with their Plate and Sheet mills, but the prospects are that they will erect a plant with a capacity of from 1000 to 1500 tons per week. The matter will be settled within the next 30 days.

THE NEW SHEET plant being erected at Newcomers-town, Ohio, by the Tuscora Steel Company is rapidly nearing completion. The main building, which is to contain four hot mills and their complement of cold mills, is 110 x 256 feet, the galvanizing department, 50 x 120 feet, and the corrugating and roofing department 62 x 240 feet. The first two buildings are completed and awaiting the installation of the machinery, and work on the third is well advanced. There has been considerable delay in getting the equipment, and the plant will not be ready for operation as early as was expected. The product will be Black and Galvanized Sheets.

WE have received from George Callahan & Co., 218 Front street, New York, a card circular which they are distributing in the interests of their Silicate of Iron Paint. It is explained that Silicate of Iron is composed of sesquioxide and silicate of alumina, and the claim is made that it will stand longer and cover better than any Paint in the market. Samples attached to the card show that the Paints are made in gray, drab, olive, oxide red, yellow, brown and lead colors. The Silicate of Iron Paints are supplied ready for use in $\frac{1}{2}$ and 1 gallon cans, 5-gallon buckets, half barrels and barrels. It is claimed that the Paint is strictly water proof; will hold its color, and will not corrode, nor peel, nor blister. It is recommended for use on roofs and cornices in places where first-class Paint is needed. It is also adapted for all house painting purposes.

THE shortage of coal in South Wales is causing considerable inconvenience to the Tin Plate mills in that district. Several works have been obliged to shut down a part of their equipment in consequence of inability to obtain a sufficient supply of fuel.

E. H. FRIEDRICH, Holyoke, Mass., has the contract for 25,000 square feet of Skylights for the Champion Coated Paper Company of Hamilton, Ohio. F. J. Shea and A. D. Hendricks are now engaged on the construction work.

THE STARK ROLLING MILL COMPANY, Canton, Ohio, have let the contract for a one-story brick warehouse, 50 x 300 feet.

THE PARKERSBURG IRON & STEEL COMPANY of Parkersburg, W. Va., with offices in the Times Building, Pittsburgh, Pa., have placed four Sheet mills in operation, and will start two other mills as soon as completed. The officials of the company are considering the installation of several knobbling fires and puddling furnaces, whereby they will be enabled to manufacture Puddled Iron Sheets and Charcoal Iron Sheets in addition to fine Steel Sheets.

Two additional hot mills have been placed in operation at the plant of the Waynesburg Forge, Sheet & Tin Mill Company, Waynesburg, Pa., and several additional mills are shortly to be built.

THE LAUGHLIN NAIL COMPANY of Wheeling, W. Va., now have their new Sheet mill, consisting of two roughing mills, four Sheet finishing mills and two stands of cold rolls, in full operation. They are also operating a galvanizing plant and corrugating works, together with a Conductor Pipe, Eave Trough and Metal Ceiling factory. The company will not be able to roll all the Sheets used in these departments.

THE negotiations for the erection of a four-mill Sheet plant at Marietta, Ohio, have fallen through, the local Board of Trade being unwilling to provide the \$50,000 cash bonus desired by the promoters.

THE WHITAKER IRON COMPANY, Wheeling, W. Va., are adding three Sheet mills to their plant. The Whitaker Iron Company and the Wheeling Corrugating Company, which are allied interests, now have between them four Sheet mills, with three more being built; four Tin

Plate mills and a tinning and galvanizing department. The Sheet product of the Whitaker Iron Company is all used by the Wheeling Corrugating Company.

It is reported that the corrugating department connected with the Reeves plant of the American Sheet Steel Company, at Canal Dover, Ohio, will be removed and added to the company's plant at Chester, W. Va.

PREPARATIONS are being made at Scottdale, Pa., to add eight new Sheet mills to the Scottdale plant of the American Sheet Steel Company. Work on the additions will be pushed, and it is expected that they will be in shape for operating early in the coming year.

THE MONTROSS METAL SHINGLE COMPANY, Camden, N. J., report a very satisfactory condition of trade in their various lines of goods. Orders have been plentiful, and among them may be mentioned shipments to points in South Carolina, Texas and other Southern States, as well as in the nearby territory, while shipments for export include Mexico, Buenos Ayres and Brazil.

Trade With Canada.

One of the most interesting addresses made by representative business men at the recent National Reciprocity Convention at Washington, D. C., was that of George T. Coppins, general manager of the Walworth Mfg. Company of Boston, Mass., who represented the Boston Chamber of Commerce at the convention. Mr. Coppins took strong ground in favor of more liberal treatment of Canada, as the largest customer for our goods. He spoke, in part, as follows:

There is no logical escape from the conclusion that Canada should be included in any scheme of trades union which is based upon Pan-American necessities. There are only a few great purchasing nations. England, Germany and France lead the list, but so far as our trade is concerned Canada takes the third place, and, in spite of her limited population of 5,000,000, she bought of our products last year \$20,000,000 worth more than France did. Canada, considering the number of its people, is our best customer. The Canadians bought of us last year goods to the value of \$20 per capita. Surely a nation that possesses such an astonishingly good customer cannot afford, on the broad principles of trade, to adopt any policy which threatens to drive him away.

But these large Canadian purchases are not the only considerations to be taken into account. These neighbors to the north of us bought last year more of our products that are classed as manufactured goods than any other nation in the world. Nearly two-thirds of all the merchandise that we sold to them came under that classification. It hardly needs to be explained to this assembly that this is the most profitable species of trade that a nation can possess. It is well to sell wheat; it is better to sell flour. It is well to sell pig iron and steel billets to a foreign people; it is better to sell them tools, hardware, machinery and various other iron and steel commodities ready for immediate use.

A new process for electroplating wooden doors, &c., with copper, brass, nickel or any other desired metal, is announced by a contemporary. The process is described as follows: To preserve the wood and prevent it from warping, it is first treated with linseed oil and resinous gum. It is then varnished, and after conducting metal strips have been fixed around the edges to disperse the current, the whole surface is rendered conducting in one of the several ways known to electrotypers. It is then immersed in the plating solution and the metal deposited upon it by the action of the current. For the decoration and enrichment of carved doors, panels or other architectural parts, as well as for general decorative purposes, such a process should prove very useful.

It is reported that another immense oil well has been struck at Baku, Russia, supplementing the great gusher which has been yielding 1,000,000 poods daily since November 17. The new gusher is almost as great a producer. The price of oil at Baku has fallen sharply in consequence of these strikes.

European Heating Boilers.

BY CHARLES F. HAUSS.

IN THREE PARTS. PART SECOND.

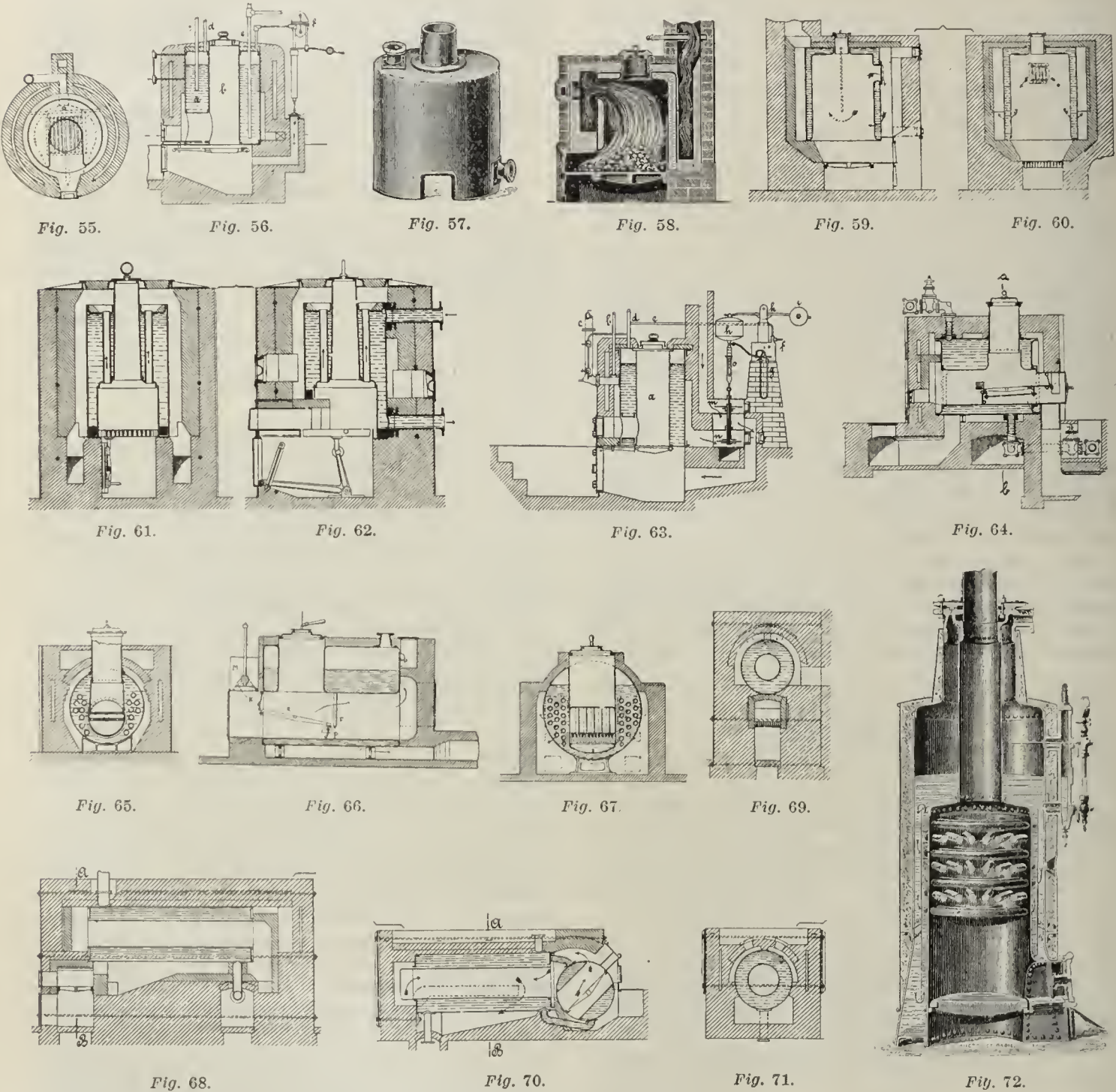
(Continued from *The Metal Worker*, November 23, 1901.)

The Bechem & Post boiler is shown in Figs. 55 and 56 with its automatic regulator, *f*; magazine feeder, *b*; safety pipe, *c*; steam supply pipe, *d*, and the water of condensation return pipe, *e*. This boiler is used for low pressure steam heating. The fire burns toward the front,

pounds, which is secured by the safety pipe being about 16 feet high above the water line. Most of the countries of Europe have copied this law; but Belgium, for instance, uses two safety valves, while France and England are satisfied with one.

Figs. 57 and 58 show the Excelsior boiler for hot water, and Figs. 59 and 60 the Grove boiler for hot water, both of which are designed for quick heating up and holding the heat a long time with their immense fuel space.

Figs. 61 and 62 represent the Rietchel boiler for low pressure hot water heating, in which the gases pass up-



EUROPEAN HEATING BOILERS.

then around the outside. The fire surface is rated to supply on an average 2600 heat units per hour, or 9 square feet of radiation per square foot of fire surface. This is a riveted boiler, built according to the laws of Germany—that is, it must stand 90 pounds of test pressure—and it is operated with the open safety pipe, which must be of the following dimensions:

Fire surface in square feet.	Up to 15	25	45	60	70	85	For all larger boilers.
Diameter of pipe*, in inches.	1 1/4	1 1/2	2	2 1/4	2 1/2	2 3/4	3

* In America, where the odd 1/4 and 3/4 sizes of pipe are not made, the dimensions given may cause surprise, but they are commercial sizes in Germany.

The limit of pressure allowed in use on a low pressure steam boiler is one-half an atmosphere, or 7.35

ward through the circle of tubes around the magazine, then down on the outside.

In Fig. 63 is shown the Martine boiler for low pressure steam heating with a complicated but effective regulator. On all first-class work in Germany the first cost of an apparatus is never considered, and they will pay as much for a reliable regulator as for the boiler.

Figs. 64 and 65 show a type of horizontal tubular hot water boiler, much in use all over Europe, which is provided with a large magazine, either round or oval in form. The products of combustion pass first to the back, then forward through the flues shown on each side of the magazine, then back again over the outside surface of the boiler, whence they pass at the rear bottom end of the brick setting into the chimney flue.

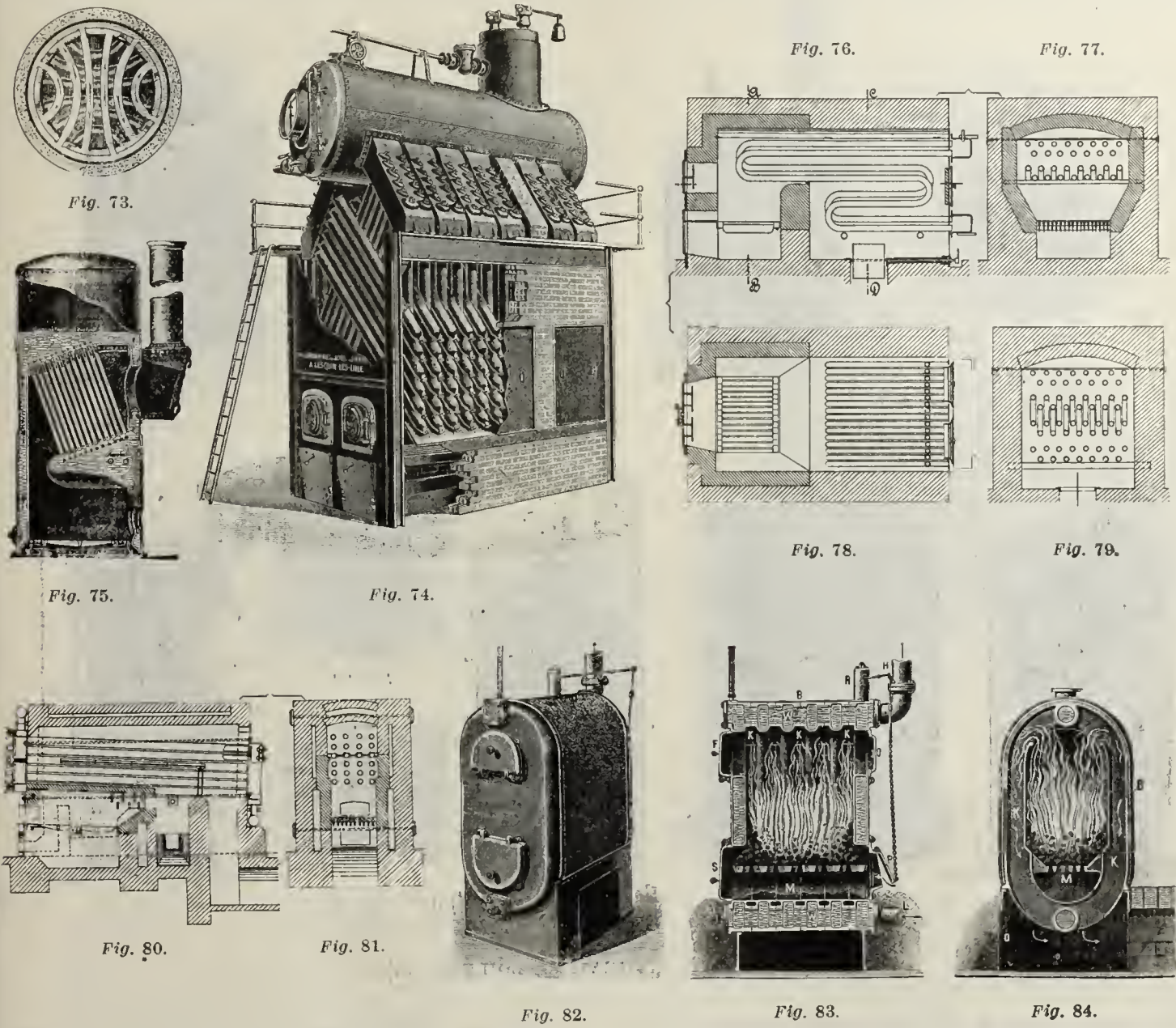
In Figs. 66 and 67 are given this same boiler for steam heating.

Figs. 68 and 69 show a return flue boiler with single large central flue. The fire passes first along the bottom outside surface to the rear, then forward to the space X, from which it enters the smoke flue X X, shown in the cross section. Figs. 70 and 71 represent practically the same boiler with a Tenbrink furnace and a slightly different travel of the products of combustion, which in this case is distinctly shown in the sketch.

For all boilers, whether for steam or hot water heating, of the kinds shown in Figs. 59 to 71. Professor Retchel gives the following generally accepted proportions: A flat grate is invariably used in Europe; hence, to

than 600 degrees F., but the temperature of the gases when in constant use should not vary much from 220 to 300 degrees.

Figs. 72 and 73 show the Colomblie boiler, made in Southern France, with very powerful direct surface in the curved tubes, one end of which is expanded into the inner shell, the other into the middle shell, which acts as a diaphragm and guarantees a positive interior circulation. To facilitate repairs, the upper and lower part of the outside shell are bolted together. One specially good point in this boiler is that the water leg, which forms the base, gets larger at the bottom and prevents the easy filling of this part of the boiler with sediment or scale. The boilers are made with from 20 to 600 square feet of



EUROPEAN HEATING BOILERS.

properly burn 100 pounds of fuel per hour, the following size of grate is required:

Kind of fuel.	Total area of grate.—Square feet.	Free air space in grate. Per cent. of total area.
Bituminous coal.....	6¼ to 7½	33 to 50
Anthracite coal.....	11½ to 13½	33 to 50
Lignite	9 to 11	20 to 30
Wood or peat.....	8½ to 9½	14 to 20
Coke	4 to 5	33 to 50

The rating of different boilers should be based as follows: For surface coming in contact with the fire, 6000 heat units, or 33 square feet of two-column direct cast iron radiation, per square foot per hour; for surface on which the flames radiate directly, 5200 heat units, or 28 square feet of radiation; for the return tubes or flues, 3600 heat units, or 20 square feet of radiation, and for the outside or last use of the shell surface, from 1800 to 2600 heat units, or 10 to 14 square feet of radiation, per square foot of fire surface per hour for hot water boilers.

The gases should leave the boiler when the first fire is built, and when first heating a building, at not more

than 600 degrees F., but the temperature of the gases when in constant use should not vary much from 220 to 300 degrees.

Fig. 74 is a wrought iron drop tube boiler (a sort of freak), made in the north of France. Fig. 75 shows another combination of water tube and shell boiler, which is made in Germany, and should be very effective.

In Figs. 76 to 79 are presented four views of a representative pipe boiler for hot water heating, made up of a series of pipe coils connected at the flow and return end into cast iron headers. The advantage of this style of boiler is that any amount of fire surface or water contents wanted can be obtained, as can also the proportion of grate surface. This type of boiler is rated to supply, on an average, 4500 heat units, or 25 square feet of radiation, per square foot of fire surface per hour.

Figs. 80 and 81 show a boiler made up of straight tubes with wrought iron headers, which is termed an American type of boiler. For steam these boilers are equipped with a large steam dome.

The pioneer cast iron sectional boiler of Germany, known as the Strebel boiler and illustrated in Figs. 82 to 88, is made up of oval sections connected with wrought iron slip nipples at the top and bottom. These boilers are made in four models for hot water; the first with from 24 to 48 square feet of fire surface, the second with 30 to 60 square feet of fire surface, and both in from four to seven sections. The third model has from 30 to 110 square feet of surface, and the fourth from 50 to 170 square feet of surface, both of the latter being made in from 4 to 12 sections. As part of this surface is extended, or dry, surface, in the ribs which form the down draft flue on each side, the makers rate them to supply only 2600 heat units per square foot of surface. In this type of boiler the area of the flues increases as sections and grate surface are added. The grate is cast on the sections, and being very heavy and solid where it is flat,

to 3000 heat units. They contain from $2\frac{1}{4}$ to $2\frac{3}{4}$ pounds of water, and hold 2 pounds of coke per square foot of fire surface.

(To be continued.)

Elementary Ventilation.

One of the speakers at a recent educational meeting in Boston, says the *Herald* of that city, emphasized the nature of ventilation as an indispensable adjunct to the training of children, and in doing so told what might be called a story of ventilation under difficulties. He was traveling in Scotland, and, though it was winter time, had determined to call at as many schools as possible, with a view to his projected article on "Education in the Highlands." One small, stuffy place, which looked more like a store than a school, he found devoid

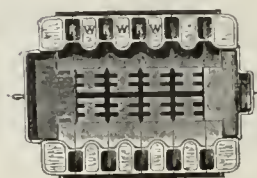


Fig. 85.



Fig. 86.

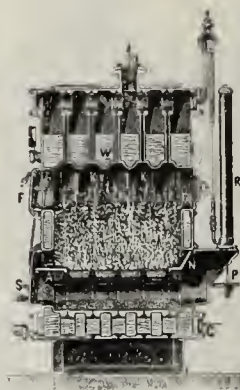


Fig. 87.



Fig. 88.



Fig. 89.



Fig. 90.

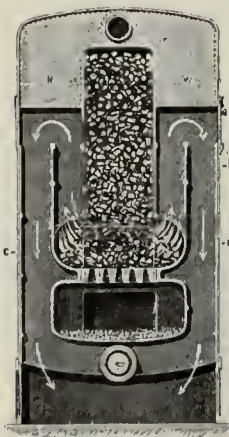


Fig. 91.

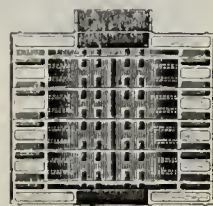


Fig. 92.

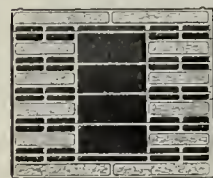


Fig. 93.

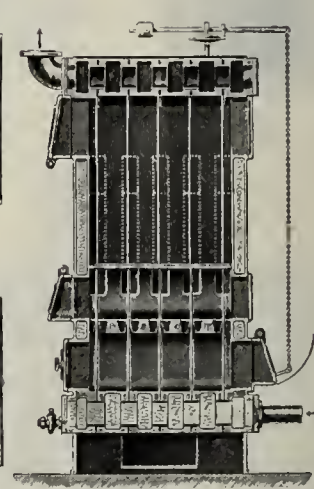


Fig. 94.

EUROPEAN HEATING BOILERS.

the section is split in the center to allow for proper expansion and contraction. That part of the grate which slants at each side is cored; consequently the grate is always cooled by the water circulating so near it.

Figs. 82 to 85 show the construction of the water boiler, and Figs. 86 to 88 the two different types of steam boiler, the one shown in Fig. 88 being so high that its use is limited to work where a pit is permissible. The makers' ratings indicate that they expect each square foot of fire surface to carry 14 square feet of water radiation, or 9 square feet of steam radiation, which seems conservative enough. The amount of water contained in the water boilers ranges from 2 to 5 pounds per square foot of surface, and in the steam boilers from 8 to $11\frac{1}{2}$ pounds per square foot of fire surface.

In Figs. 89 to 94 are given the Strehla boiler, Figs. 89 and 90 showing the hot water type, and Figs. 91 to 94 the steam boiler. This boiler has a large central magazine, and is made in from 4 to 11 sections, with 67 to 224 square feet of fire surface, rated to carry 16 square feet of radiation for water and 10 square feet of steam radiation per square foot of fire surface, equal

of even the slightest means of air renewal, yet the teacher assured him that it was one of the best ventilated educational institutions in Scotland. As he seemed incredulous, the lady invited him to remain for an hour until the time for recess. He did so. When the time arrived the lady rang the bell. Whereupon the children left their desks, put on their cloaks and coats, formed into processional order, and marched for exercise into the open space outside the school. Meanwhile the windows of the building had been thrown open, and for 10 or 15 minutes the wind was allowed to do the work of the missing ventilation apparatus. That is was snowing hard at the time did not interfere with the experiment.

H. N. BREWSTER & Co., Northampton, Mass., have the contract for plumbing a business block in that city, and a house for George Beams in Florence. They are also installing a heating system in the greenhouses at Smith College, and have installed a hot air furnace heating system in the residences of Professor Cable and Professor Mills, and in that of Mrs. Waite of Hatfield.

John D. Clarke.

John D. Clarke died at his residence, 368 Macon street, Brooklyn, N. Y., on December 3, from neuralgia of the heart, at the age of 54 years. Mr. Clarke was a contracting steam fitter at 276 Water street, New York, where he established himself in business in 1886. He devoted himself to a high class of work and had heated many of the finest residences in the vicinity of New York, as well as some of the large buildings in the city. He was a member of the National Association of Master Steam and Hot Water Fitters and also prominent in Masonic circles. The funeral services were held at his residence on Thursday night and the interment was made in Evergreen Cemetery on Friday. He is survived by a wife, one son and two daughters.

Death of Martin Fallon.

Martin Fallon, one of the best-known plumbers of Brooklyn, N. Y., died at his home, 230 Cumberland street, that city, on November 28. He was born in New Jersey in 1845 and had resided for the past 45 years in Brooklyn, where he conducted a successful plumbing business. He returned to his home from business on Wednesday complaining of not feeling well, and in the night was stricken with congestion of the lungs, from which he died the next day. Mr. Fallon took an active interest in plumbing affairs, having held various offices in the Master Plumbers' Association of Brooklyn, of which body he was a past president. He also served a term as a member of the Executive Committee of the National Association of Master Plumbers. He was a member of St. Albans Lodge, F. and A. M. The funeral services were held at his late home on Sunday afternoon, the Rev. Doctor Stockdale of the Fleet street Methodist Episcopal Church officiating. He is survived by a widow, two sons and two daughters.

Life of Cast Iron Pipes.

In answer to a correspondent asking as to the probable life of cast iron pipe buried in ordinary soil, *Municipal Engineering* gives the following interesting information on the subject:

The only data from observation at hand are found in reports from St. John, N. B., and Los Angeles, Cal. Gilbert Murdoch, superintendent of the water works at the former place, reported in 1892 several observations. In one case a 4-inch main, in use about 33 years in marsh mud, had failed by softening of the outside, and the break took place at some air cells in the body of the pipe.

A 6-inch pipe 52 years old in soft, slaty rock, failed from softening. A 24-inch pipe laid in well drained, gravelly brick clay, 36 years old, failed from inherent defects in the pipe, the outside of the pipe being sound and the inside having a coat less than 1-16 inch thick. None of these pipes were protected by coatings. The conclusion regarding the 24-inch pipe in well drained gravelly clay was that, aside from the defects in manufacture, its life would have been practically indefinitely long.

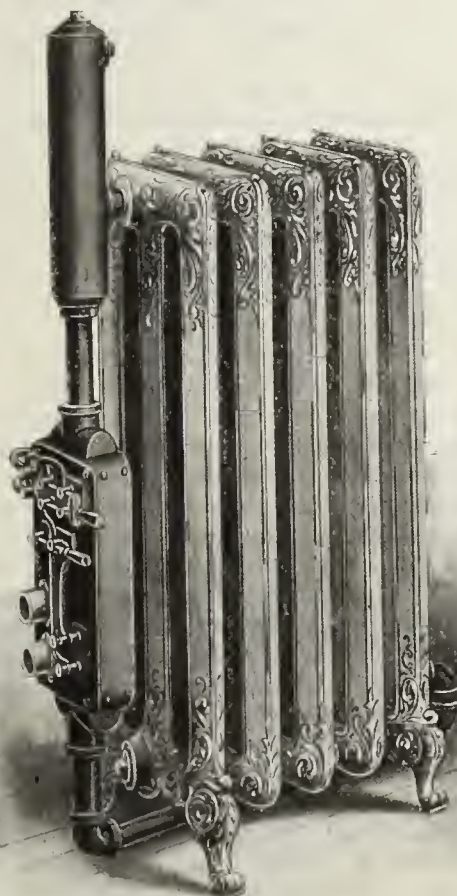
J. H. Dockweiler, City Engineer of Los Angeles, Cal., reported the condition of the water works in 1897. The pipe was uncovered in 318 places. Cast iron pipe 28 years old was found in a perfect state of preservation. In sand or loam the bare pipe metal did not rust. In hard adobe soil there was some rust, but the pipe was practically uninjured. In all cases the original asphalt coating had practically disappeared. A later report of a board of engineers, consisting of J. D. Schuyler, A. L. Adams, A. H. Koebig and J. B. Lippincott, estimated the depreciation of the water pipe in the city in the better soils at 1.25 per cent. per annum, indicating a life of 80 years, and in the poorer soils at 2 per cent. per annum, indicating a life of 50 years. The effect of the soil upon the outside of the pipe and of tuberculation upon the inside are both allowed for in these estimates.

In case there is opportunity for electrolysis from street railway or other electric leakage, the life of pipe

is very greatly shortened. Some chemical conditions of soil which will shorten the life of pipe will doubtless be met with.

An Electric Water Heater.

In the accompanying illustration is shown an electric water heater patented by Waldo F. Follett of New Haven, Conn., who states that the chief object of his invention is to provide an electric water heater of cheap and simple construction, and sufficiently efficient to take the place of the usual coal burning water heater used in connection with a hot water piping system. From



An Electric Water Heater.

the illustration it may be seen that the electric water heater consists of a cast iron box, in which there are waterways, and also space for the resistance coils for heating the water. Provision is made for connecting the necessary wires, and a switch is provided for the control of the electric current. The resistance coils are so arranged as to be protected from injury and to prevent short circuiting. The simplicity of the construction enables any necessary repairs to be conveniently made. This heater, it is pointed out, may be used for heating water for any purpose where an electric current is obtainable, but it was especially designed for use in connection with radiators. The heater may be located in a basement in connection with stacks of indirect radiators, or may be connected and used in the same manner as a coal burning hot water boiler. It has the advantage that the electrical regulating switch may be located at any convenient point in the building and the temperature of the building regulated without ever going to the cellar. The heater is shown in connection with a portable radiator. It is available for use wherever there are electric light brackets, and is especially adapted for use in offices, hotels and hospitals, where heat may be required quickly or temporarily. The apparatus may also be connected with the kitchen range boiler to prevent it from freezing when the house is closed, or for furnishing hot water in the summer season, when the coal fire is supplanted by a gas or oil range.

Competition in the Australian Plumbing Trade.

It is certainly true, says the *Australian Ironmonger*, that competition in the plumbing business is keener now than ever before. Especially is this the case in Melbourne, a city which should tell another tale, considering the installation of its new and comprehensive system of sewerage. Few, if any, plumbing businesses in Melbourne are returning a fair percentage of profit. The competition met with on the part of "carpet bag" plumbers is a serious element to the man who has business premises to maintain. For this state of things some remedy must be sought.

It is difficult to suggest a proper form of relief. Preferential buying has been proposed, and if practicable would be to a large extent a remedy against excessive competition. It is, however, a hard matter to bring such a system into operation.

It should be impossible for a man who has not qualified himself to conduct a plumbing business to obtain material on the same terms as one that has. Melbourne, through its faulty licensing system, is teeming with laborers, drainers, bricklayers, bootmakers, &c., who are buying their material on the same terms as the recognized master plumbers, and so are able to compete against them, to their disadvantage.

Another remedy which may be applied is in respect to the free and easy credit system in vogue. This should in some way be curtailed by agreement between the merchants and plumbers. Any half learned journeyman who cannot find employment at standard wages because he cannot earn the money for the employer, can start business without capital. Merchants are too willing to let him have material, and too many open accounts are kept. He immediately sets out to hunt up all kinds of jobs, and is willing to take them up without any margin of profit, in order to establish himself. If things do not come right he does not pay the merchants, and after a compromise starts afresh.

Had plumbers' accounts to be settled when due, more care would be exercised in estimating, and the margin of profit would be considered. Merchants in combination should insist on all accounts being paid within two months, on pain of defaulters being placed on a cash on delivery basis. This might cause a few hardships to good men, but it would shut down a lot of competition and make speculators careful in tendering. A plumber getting behind in his payments, and being required to pay cash for any further goods, would often be saved from bankruptcy. The success of a business depends on the margin of profit, and not on the amount of work done.

Holding the Water Line.

A correspondent of *Marine Engineering* tells of an experience he had with an obstinate blow off pipe in the following words: "A number of years ago, while employed as assistant engineer on an old fruit ship running to New York, the following mishap occurred. The machinery of the ship consisted of an old single engine 42 inches square, with all pumps attached, and a boiler of the fire box return tubular type. As we had neither evaporator nor tanks, and our steam pressure was low, we used salt water. We had heavy weather all the trip, and were about off Hatteras, bound to New York. I had just gone on watch, and finding the density of the water in the boiler too great, started to blow off a little. On attempting to close the blow cock it stuck fast and could not be shut; and as there was no valve on the ship's side we were in a bad fix—a gale of wind blowing, the sea running high, the blow cock wide open, and the water blowing out faster than it could be fed in. To stop the engine meant to fall off in the trough of the sea and be swamped, and it was only a question of time when she would stop herself if that blow off was not closed. Realizing the necessity of prompt action, I looked around and my eyes fell on the coal hammer and a heavy sledge. Calling the fireman to hold his hammer to one side of the blow off pipe, which was copper, I took the sledge and began to flatten the pipe. Fortunately, the brazing held, and we succeeded in hammering the

pipe out flat, thereby stopping the water. An old rivet was afterward found wedged in the blow cock and preventing it from closing."

We do not pretend to know much about the perils of falling into the trough of the sea, says the *Locomotive*, although we have always heard it said that it is not a proper thing to do, if one can help it. But we do know something about the perils of hammering a blow off pipe when the boiler to which it is attached is under pressure; and unless the trough was a pretty bad one, we think we had rather take chances with it than with the hammer.

Becker's Rubber Bucket for Chain Pumps.

The accompanying cuts represent rubber buckets for chain pumps, offered by C. L. Becker, Keokuk, Iowa. As shown in Fig. 2 the metal portion of the bucket consists of two parts, which can be opened or closed. These



Fig. 1.—Becker's Rubber Bucket for Chain Pumps.

buckets, it is explained, can be hooked into or removed from the chain link at pleasure, without the use of tools and without injury to the chain. The advantage claimed for this bucket is that the chain links do not have to be

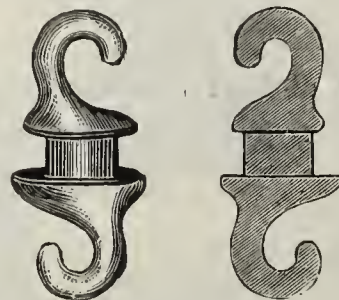


Fig. 2.—Metal Parts of Becker's Rubber Bucket.

opened in order to insert the bucket, and that there is, therefore, no danger of weakening or breaking the links of the chain.

New York City Notes.

Borough President Cantor of Manhattan has selected former Assemblyman Perez M. Stewart for Superintendent of Buildings in that borough. Mr. Stewart is a practical builder and has erected many apartment and private houses, principally in the Riverside section of the west side. The plumbing trade can look for the fairest treatment from Mr. Stewart.

* * *

Chief Inspectors of Plumbing P. J. Andrews and Gen. Geo. D. Scott of Manhattan and the Bronx, respectively, together with John Renahan, president of the Examining Board of Plumbers, are strongly indorsed by the trade for retention in their present positions as most efficient officers.

* * *

For a man whose picture formed part of an obituary notice in an out of town trade paper, William J. McDermott of 381 Bleecker street, Manhattan, was congratulated at the last meeting of the Manhattan Branch for being a lively corpse. The error arose from a similarity of names with M. J. McDermott of Tremont, whose death was noticed in a previous issue.

* * *

The United Central Council of Building Trades, formed from the old Board of Delegates and Building

Trades Councils, has been organized for the purpose of doing away with sympathetic strikes. At its meeting held last Monday, both organizations of journeymen plumbers were excluded from membership, together with the Architectural Iron Workers' Union, until differences in their trades can be settled and their strikes called off.

* * *

Owing to the strike and other troubles on the Ansonia Hotel, water was allowed to remain in the supply lines during the recent cold snap, and Milton Schnaier reports that over 60 miles of pipe is frozen solid.

* * *

There is a rush of plumbers to file their bonds with the Sewer Department and to register with the Board of Health, both of which things must be done during the month of December.

* * *

The new heads of city departments will find many good men in places from which they can hardly be spared, such as Robert McNichol, permit clerk in the Sewer Department; Geo. G. Stillwell, in the Department of Highways; Thomas Stanton and Jos. Lewis, in the Water Department, and Patrick Wolf, in charge of meters in Manhattan; Sherwood Kipp in the Highways Department in the Bronx, and many others in other departments and boroughs.

Death of Henry J. Dayton.

Henry J. Dayton, who for 44 years had been prominent in the Furnace and Heating trade of Brooklyn, N. Y., died at his home, 440A Sixth street, on Wednesday, December 4. Mr. Dayton was born at Westfield, Mass., in 1832, and after an education in the schools of his native town, entered business. In 1857 he went to Brooklyn and associated himself with John Q. Adams & Son. The firm afterward became Dayton & Carter, and after the death of Alanson Carter Mr. Dayton succeeded to the head of the firm, which became Dayton & Montgomery, this concern having been in existence since 1886. He was active in his connection with the First Reformed Church of Brooklyn. He leaves a wife, who was a Miss Roxanna Howes of Ashfield, Mass., and a descendant of Puritan ancestry. He had been married for 40 years. His son, Ralph E., and a daughter also survive him. The funeral services were held at his late home on Friday evening at 8 o'clock, the Rev. Dr. Albert J. Lyman officiating.

The P. and S. S. League.

On Monday the Central Foundry Company team won two games in the bowling tournament of the Plumbing and Steam Supply League in New York, and the John A. Murray team lost two games, while the H. P. Read Lead Works bowlers had the bitterness of their defeat sweetened by a victory. The last two contests were close. On Thursday night the team of E. F. Keating was short one man, and, in consequence, suffered two defeats, while the team of Ronalds & Johnson Company, New York, won both their games and the team of F. Adey & Co. scored a victory and a defeat. The scores for the week were all below 700, with the exception of the 716 of the Central Foundry Company on Monday night.

At the regular meeting of the Master Plumbers' Association of Buffalo, N. Y., held November 25, a number of the members were balloted upon for the indorsement of the association for the position of member of the Board of Examiners of Plumbers and Plumbing. A vacancy on the board occurs December 31, 1901, by the expiration of the term of Charles B. Huck. A number of ballots were necessary to finally determine the successful member, Charles B. Huck, he receiving the unanimous indorsement of the association. Mr. Huck is also president of the New York State Association of Master Plumbers and a former president of the local association.

Heating and Plumbing Notes.

THE disposition of the manufacturers of Boilers to be in a position to secure radiation through sources over which they have an influence has resulted in a report that the new year will finish with a new Radiator plant in full operation, which, it is rumored, will produce a larger amount of radiation during its first year than has ever been put out by any new Radiator plant. This is but one of the different reports in reference to Boilers and Radiator productions which are current in the heating trade at this time.

JOHN BEST, a pioneer manufacturer of Lancaster, Pa., and head of the Best Boiler & Engine Works, the Lancaster Radiator & Tube Company and other local concerns, died from heart disease on November 25 at his home in that city, in the eightieth year of his age. In 1890 Mr. Best purchased the Lancaster Radiator Company, which he added to his works.

THE WEIR STOVE COMPANY, Taunton, Mass., are sending out a very attractive piece of trade literature, entitled "Stories of the Glenwood by People Who Use Them," devoted to their Glenwood Hot Water Heaters. Under the name Glenwood, the company manufacture Hot Water, Steam, Warm Air and Combination Warm Air and Hot Water Heaters. The first few pages of the catalogue show general and broken views of the Glenwood Water Heaters, so that the construction of the ash pit, grate and fire and water sections, and the fire and water travel, and the regulating dampers can be readily understood. These are followed by some 40 pages, each of which presents a half-tone engraving of a New England residence in which the Glenwoods are used. The lower portion of each page is devoted to testimonial letters. Side heads printed in red ink call attention to the principal feature of the testimonial. These "Stories of the Glenwood," if used by an enterprising steam fitter among prospective purchasers in his locality, should have the effect of substantially increasing his trade.

At a meeting of the stockholders of the United States Radiator Company, held at Dunkirk, N. Y., last week, S. L. Clement of Buffalo was elected a director to fill a vacancy. The directors elected the following Executive Board: R. J. Gross, F. W. Smith, W. C. Marsh, Newell F. Gould and Harry S. Martin.

SUPERINTENDENT HARRY H. BENDER of the New York State Department of Public Buildings has completed the renovation of the plumbing system in the Executive Mansion, which was vacated by Governor Odell last spring on account of the sickness of his daughter. Under Mr. Bender's charge, not only the plumbing system, but the heating system also has been put in perfect working order. After the plumbing work was completed it was subjected to a final smoke test, and found to be proof against the escape of air from the sewer and house drainage system.

"It is authoritatively learned," says the *Express* of San Antonio, Texas, "that the result of the suit brought by Attorney-General Bell against the Master Plumbers' Association of Texas, will be that the officers of the association will be fined an amount approximating \$3000, which will be paid and the matter ended."

SAMUEL GIBSON died at his residence, 2304 Wylie avenue, Pittsburgh, Pa., after a protracted illness, aged 54 years. For a number of years he conducted a plumbing business on Center avenue. He is survived by a widow, one son and one daughter.

HAWLEY & Co., St. Paul, Minn., have the contract for the plumbing and gas fitting in the new Norwegian Hospital in that city.

THE CHARLES THATCHER COMPANY, Waterbury, Conn., bid \$2280 and secured the contract for a plumbing system for the Bank Street School, in that city.

F. P. STEWART & Co., Ithaca, N. Y., have the contract for plumbing and steam heating the Cayuga House and the Boyer Block, in that city. They are also heating the Van Kirk and Foote houses.

H. L. SAWYER, South Framingham, Mass., has the contract for putting in the heating and ventilating ap-

paratus at "The Gorman," South Framingham's new playhouse and hall.

A FIRE visited the plumbing and hardware establishment of Erastus S. Chesebro, Stonington, Conn., last week, the principal loss resulting from the water used in quenching the fire.

P. H. GARRITY of Waterbury, Conn., is heating and plumbing the new residence of D. M. Rogers. He has just installed a hot water boiler in the residence of John Byrne, and has the contract for plumbing the residences of Charles Roper and James Finn, in Waterbury.

THE rolling mill of the Tube plant of the Alabama Tube & Iron Company, at Helena, near Birmingham, Ala., has begun operations, and by the middle of the month it is expected that the whole plant will be in running order. From 200 to 250 men will be employed.

THE Commissioners of Washington, D. C., will receive bids until December 14 for a steam power plant and connections at the Trumble Street Pumping Station.

THE authorities of New Haven, Conn., are considering an ordinance providing for the licensing of journeymen plumbers.

H. C. PETERSEN & Co. of Utica, N. Y., bid \$2000 and secured the contract for heating and plumbing the new County Clerk's Office for Madison County. They will use a Low Pressure Steam Heater made by the International Heater Company.

THE heating of the new shops of the Reading Company, at Reading, Pa., is now engaging the attention of the officials. The plant will be located in the power house and is known as the Foster system. It will require about 23 miles of Pipe, the sizes varying from 1½ to 14 inches. This work, it is thought, will be started soon, and it will take months to complete. The heating will be done by steam, but under a very low pressure. All of the main pipes will run through the conduits which were laid at the time the shop was erected.

THE ALLEN FIRE DEPARTMENT SUPPLY COMPANY of Providence, R. I., who have a branch office in Worcester, Mass., have recently been successful in securing the contracts for heating new buildings erected in the latter city, including the Home and Sever Street School, the Beacon Street Engine House and the Northville School. Their bids on these jobs were \$2347, \$624 and \$1985, respectively, the next lowest bids for the same work being \$3387, \$915 and \$2845.

FIRE of unknown origin destroyed two floors of the four-story brick building owned by Maule & Pancoast, at the northeast corner of Fourth and Locust streets, Philadelphia, Pa., last Tuesday night, damaging the building and its contents to the extent of \$25,000. Maule & Pancoast, manufacturers of Engineering and Steam Fitters' Supplies, occupied the first floor and basement of the building.

THE UNITED STATES RADIATOR COMPANY of Dunkirk, N. Y., under date of December 2, are issuing the following announcement to the trade: "We are pleased to announce the opening of our Minneapolis branch office, 432 and 434 Guaranty Loan Building, where our friends and patrons will receive a cordial welcome and attention at the hands of H. J. Warneke, who will represent the company as manager. We shall carry a complete stock of Radiation to enable our customers to enjoy prompt delivery. We bespeak for Mr. Warneke your continued favor and assure you that it will be our aim to merit your patronage."

THE UNION LEAD & OIL COMPANY, says the *St. Louis Republic*, have decided to make St. Louis, Mo., their headquarters and erect there, in addition to the largest White Lead plant in the world, a plant for turning raw material into Shot, Lead Pipe, Sheet Lead and Plumbers' Supplies. This plant when completed will have a daily output of 15,000 tons. The company and those allied with their interests control the Missouri Lead field.

FROM the time the plant of the Youngstown Iron Sheet & Tube Company, at Youngstown, Ohio, was originally projected, it was their intention to build an Open Hearth Steel plant to supply their own Steel and make

them independent of the open market. Recently the directors of the company increased the capital stock \$1,000,000, and this money will be used for the building of a basic Open Hearth Steel plant, to furnish steel for the new Tube and Sheet mills, which they are building. Detailed plans of the new plant are being prepared and work will be started in a short time. It is likely the new steel plant will be ready by the latter part of 1902. The new sheet mill of the Youngstown Iron Sheet & Tube Company is rapidly nearing completion, and will be ready for operation within 60 to 90 days.

FLINT & WALLING MFG. COMPANY, Kendallville, Ind., have just issued general catalogue No. 42, which illustrates and describes their line of Star Wind Mills, Hoosier and Fast Mail Pumps and Auxiliary Goods. The catalogue contains nearly 250 pages, is attractively printed and bound, and presents satisfactorily the extensive line to which it is devoted. In the early pages the growth of the company's business is impressively indicated.

LAIB COMPANY, dealers in Mill, Factory, Steam and Plumbers' Supplies, Louisville, Ky., are about to move to more spacious quarters, where they will be in a better position to serve their customers than heretofore. After January 1 they will be located in their new store, 439 West Main street, which extends through an L to 153 Fifth street, the latter premises being used for shipping purposes. The company have just issued a 450-page catalogue, illustrating their full line of goods.

New Firms and Changes.

THE UNION MACHINE SHOP & PLUMBING COMPANY of Union, N. Y., have opened a shop on Hanna street, one block from the Erie Depot.

THE GORDON PLENUM LIGHT COMPANY, 205 Market street, Camden, N. J., have been incorporated by J. Fred. Zimmerman, Thomas Gordon and Granville N. Buzby, with a capital stock of \$60,000, to manufacture Gas Governors, &c.

THE TUBULAR INCANDESCENT GAS BURNER COMPANY of Pierre, S. D., have been incorporated with a capital stock of \$500,000 by S. M. Williams, Joseph Agust and L. L. Stephen.

THE HENRY ELECTRICAL COMPANY have been incorporated at Denver, Col., with a capital stock of \$1,000,000, for the purpose of manufacturing and putting on the market a new electrical device, the invention of the late J. C. Henry of Canon City, for heating and lighting electric cars. C. F. Elliot is president, M. F. Hardy vice-president, and James H. Peabody, president of the First National Bank of Canon City, is the chairman of the Board of Directors of the new company. It is said that with this device electricity is generated through the agency of the axles of cars, when running at a speed of 4 miles an hour. The surplus generated while the cars are running is gathered in storage batteries for use when the train may be standing still or side tracked. It is claimed that cars may be lighted, warmed or cooled, as the season may require, through the use of this apparatus.

THE R. C. INSLEE COMPANY have succeeded the Harlow-Inslee Company as sole New England agents for the Flushometer, the Kenney system. H. N. Libbey has been appointed manager of the new company, with offices at 176 Federal street, Boston, Mass.

THE AMERICAN WARMING & VENTILATING COMPANY of Elmira, N. Y., have been incorporated with a capital of \$10,000. The directors are R. M. Geddes of Newark, N. J.; L. D. Shoemaker and George McCann of Elmira.

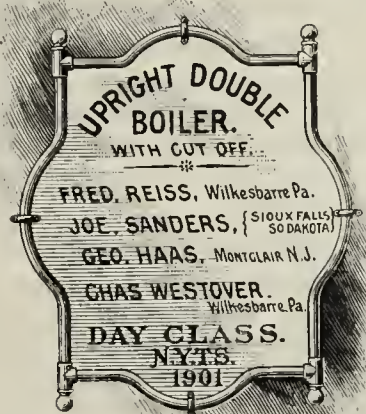
THE FREEMAN-BRYANT MFG. COMPANY of 419 Market street, Camden, N. Y., have been incorporated with a capital of \$1,000,000 to manufacture Boilers, Pumps, &c. John W. Freeman, Walter G. Bryant and C. H. Cole are the incorporators.

THE PHOENIX STEAM HEATING COMPANY of Chicago have been incorporated with a capital stock of \$25,000 by George Clements, Augustus I. Sanborn and James D. Robertson.

CHARLES A. KUNZ, formerly of the firm of T. Kunz & Sons, at Findlay, Ohio, has opened a plumbing and tin shop at 678 South Main street, Findlay, Ohio.

Some Characteristic Signs

The first function of the sign which a man hangs in front of his place of business is to advertise that business, and the question that the steam fitter, gas fitter, plumber, tinsmith and cornice maker should ask himself is, "Why do I patronize a carpenter when all the necessary materials for the painter to work on are to be found in my own shop?" If the sign is to advertise your business, it should by all means, if possible, be characteristic of the business. It should be made of materials used in every day work, and so constructed as to show the



Characteristic Signs.—*Fig. 1.*—*A Sign for Steam Fitters and Gas Fitters.*

superiority of the handicraft of the workmen in your employ.

For example, the steam fitter and the gas fitter work almost entirely in iron pipe. In Fig. 1 a sign is shown that was used by some students at the New York Trade School in connection with the iron piping for the hot and cold water service of an upright double boiler, which was their exhibition piece of work for the season. The frame of this sign is made of iron pipe and fittings, the pipe being bent to lend some attractiveness to its appearance. The frame supports a piece of galvanized iron used as a ground for the lettering. It will not require any considerable ingenuity for a good mechanic to vary the style and shape in order to make a swinging sign to hang over a sidewalk, or a sign to be supported

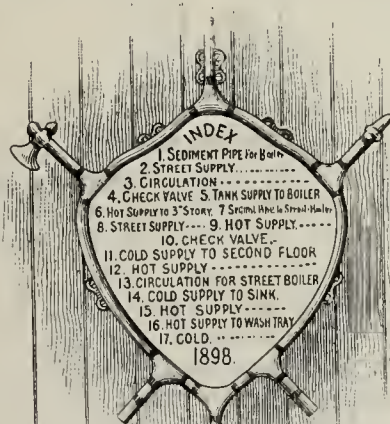


Fig. 2.—A Sign for a Plumber.

by an upright post, or a sign to fasten to the wall, similar to the one shown.

If the plumber needs a sign, the example presented in Fig. 2 should especially meet with the approval of plumbers of Scotch and English descent, suggesting, as it does, the time when the shield, spear and battle axe were the principal implements of warfare. Such a sign affords an opportunity for the plumber to show his skill in bending the pipes into graceful and ornamental shapes, as well as his dexterity as a lead beater in beat-

ing up the spear head and the axe head. The wiped joints will demonstrate his handiwork, and the contrast between the lead pipe, the white solder and the soil used will give additional life to the design. Sheet lead may be used for the ground on which the lettering is to be done. If the whole sign, when completed, is covered with a water proof varnish, it will retain its appearance



Fig. 3.—Another Design Suitable for a Plumber.

until it can be replaced by another characteristic sign of different design to attract further attention.

A design that might be followed for the second attempt is that shown in Fig. 3, which is also the work of students at the New York Trade School. In this example the scroll so frequently used in ornamental work is a conspicuous feature. The background, which in this instance was used for the index in connection with an elaborate system of piping, affords ample opportunity for the plumber to present his name and the character of his special business.

The business man who runs a tin shop in connection with his furnace, roofing and general sheet metal work-



Fig. 4.—A Sign that Many Can Use.

ing business will find in Fig. 4 a sign used by a concern doing business on Columbus avenue, New York. The ground consists of a piece of sheet iron, around which is an ornamental scroll frame, made of band iron $\frac{1}{8}$ inch thick and 1 inch wide, which readily lends itself to the bends necessary to form the ornamental shapes presented. The sheet iron is attached to the scroll frame by means of bolts which are split at one end and provided with rivet holes for fastening to the sheet iron. The supporting bar may either be forged in the tin shop or by a smith of deeper dye—the blacksmith, who is better qualified for working in heavier iron. One end may either be imbedded in a brick wall or provided with offsets with holes for fastening to the frame—

work of a building by means of wood screws, the outer end to be supported by means of wire guys.

A scroll of sheet metal, shown in Fig. 5, is suggestive of the ornamental architectural sheet metal work produced in a modern cornice shop, and is as well adapted for the tinsmith and the stove dealer as for the cornice and skylight maker.

Signs of this character, if adopted by the trade, would be somewhat novel, and if widely used might enable the general public to locate a steam fitter's, plumber's or tinsmith's shop as readily as the barber shops are located by the striped poles universally used by

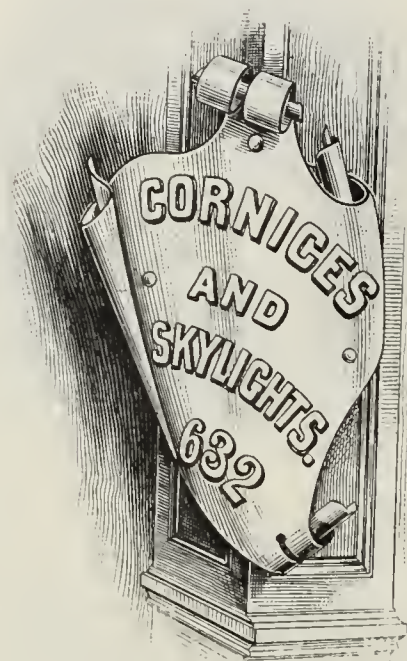


Fig. 5.—For the Architectural Sheet Metal Worker.

tensorial artists. Such signs, moreover, possess the additional merit that they can be produced in the shops of those who use them, whereas the barber will still be under the necessity of calling upon the carpenter as well as the painter.

AMERICAN IRON AND STEEL STATISTICS.

The annual report of the American Iron and Steel Association for 1900 has just been issued by James M. Swank, general manager, 261 South Fourth street, Philadelphia. The publication of this report has been delayed much beyond the usual time because the association has had in hand simultaneously the preparation of the *Directory of the Iron and Steel Works*, to be issued in a few weeks. The presentation of statistical information relating to the American iron trade has not been seriously delayed, however, as the statistics of various in-branches of trade have been published from time to time in the *Bulletin* as fast as collected from the manufacturers. The report gives the information in much greater detail than the preliminary figures thus published. Forming a part of the report is a paper prepared for the United States Geological Survey, which is devoted to a review of the progress made by the world's iron and steel industries down to the close of the nineteenth century. A valuable feature of this paper is a chronological record of the development of the iron and steel industries of the United States from 1619 to 1900, giving the principal events in that development and a summary of the grand results. Following are some of the figures of domestic production given in the report:

PIG IRON.

Twenty-one States made pig iron in 1900, the same number as in 1899. The total production of pig iron in 1900 was 13,789,242 gross tons, against 13,620,703 tons in 1899, 11,773,934 tons in 1898 and 9,652,680 tons in 1897. The production in 1900 was 168,539 tons larger than in 1899.

The production of pig iron in the second half of 1899 and the first half of 1900 aggregated 14,974,105 tons, or

almost 15,000,000 tons. The production in the second half of 1899 was 1,042,369 tons larger than in the first half, but the production in the second half of 1900 was 1,495,896 tons less than in the first half. The large production in the second half of 1899 and the first half of 1900 was due to the extraordinary demand accompanying and following the boom of 1899, and the decline in production in the second half of 1900 was due to the subsidence of the boom.

In the first half of 1901, however, there was again an increase in the production of pig iron, the output in that period amounting to 7,674,613 tons, or many thousand tons more than in either the second half of 1899 or the first half of 1900. The present year promises to yield a total production in round numbers of 15,500,000 tons. We estimate the value at the furnace of the pig iron product of 1900 as amounting to \$259,944,000.

BESSEMER STEEL.

The total production of Bessemer steel in the United States in 1900 was 6,684,770 gross tons, against 7,586,354 tons in 1899, showing a decrease in 1900 of 901,584 tons, or almost 12 per cent. The production of 1899 was the largest in our history.

OPEN HEARTH STEEL.

The total production of open hearth steel in the United States in 1900 was 3,398,135 gross tons, against 2,947,316 tons in 1899, an increase of 450,819 tons, or over 15 per cent. Our production of open hearth steel has more than doubled in the last four years.

In 1899 the production of open hearth steel by the basic process amounted to 2,080,426 tons and by the acid process to 866,890 tons. In 1900 2,545,091 tons were made by the basic process and 853,044 tons were made by the acid process.

TIN PLATES.

The duty on tin plates and terne plates provided for in the tariff act of 1890 went into effect on July 1, 1891. From that date until the close of the fiscal year ending on June 30, 1897, the statistics of our production of tin plates and terne plates were regularly collected for the Treasury Department by Col. Ira Ayer, special agent. For the second half of 1897 and the year 1898 they were collected by *The Metal Worker* of New York, and for 1899 and 1900 they have been collected by the American Iron and Steel Association. From the data thus obtained we have compiled the following table in gross tons of our production of tin plates and terne plates in the calendar years 1891 to 1900, the figures for 1901 being for the last six months only. The production of dipping plants is included in the figures given:

Calendar years.	Gross tons.	Calendar years.	Gross tons.
1891 (last six months).	999	1896.....	160,362
1892.....	18,803	1897.....	256,598
1893.....	55,182	1898.....	326,915
1894.....	74,260	1899.....	360,875
1895.....	113,666	1900.....	302,665

PLATES AND SHEETS.

The production of plate and sheet iron and steel in the United States in 1900, excluding nail plate, amounted to 1,794,528 gross tons, against 1,903,505 tons in 1899.

The authorities of the United States Patent Office have handed down an opinion in the case of Charles E. Tripler of New York against Professor Carl Linde of Munich, Germany, relating to the latter's priority of invention for the intensifying process of making liquid air. Professor Linde announced in 1895 that he had discovered a practical method of making liquid air in large quantities, and at a comparatively small cost. After applying for a patent in this country and in several foreign countries, he published in scientific periodicals full details of his process. Mr. Tripler filed application for a patent on a similar invention in 1897, asserting that he had discovered it in 1891. He formed a company to exploit his process and disposed of large amounts of stock in the same.

The Manufacturers' Club of Philadelphia is reported to have in preparation a memorial to Congress indorsing the metric system.

THE LETTER BOX.

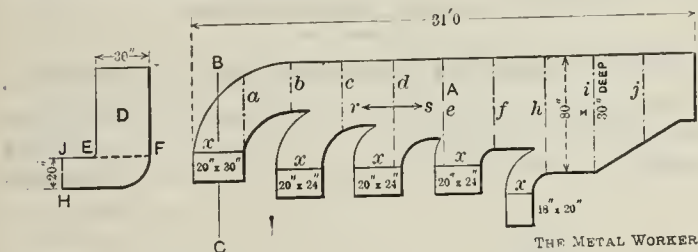
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

CONSTRUCTING A FRESH AIR DUCT.

From H. K., Weatherly, Pa.—I have a fresh air duct to make out of No. 22 galvanized iron, as shown by the sketch which is herewith inclosed. Please advise me through the columns of *The Metal Worker* how to construct and lay it out.

Answer.—In Fig. 1 is presented a reduced reproduction of our correspondent's sketch, which shows a plan view



Constructing a Fresh Air Duct.—Fig. 1.—Plan of the Duct to Be Made.

of a fresh air duct, A, 30 x 80 inches in size at its largest section and 31 feet long, having five branches or outlets of the size as indicated. As our correspondent has sent us no side or end view, we have assumed that a section taken through B C would appear as shown by D, which makes the depth of the duct 30 inches and the side view of the branch 20 inches, as shown in plan. Then, in this case, the connections between the branches and duct should take place on the lines X, X, X, &c., the side of the branch appearing as shown by J E F H in section D, connecting the 20-inch opening of the branch to the 30-inch opening of the duct by means of the curved corners, as shown.

In constructing a large duct of this kind, where a number of sheets are to be joined together, a rigid construction must be provided for. While there are various methods employed, the one shown in Figs. 2 and 3 is usually adopted, as it prevents sagging in the middle. Assuming that iron 36 inches wide will be used, the duct will require a little more than ten widths, as shown by a b c d e f h i j in Fig. 1. All the corners on the entire

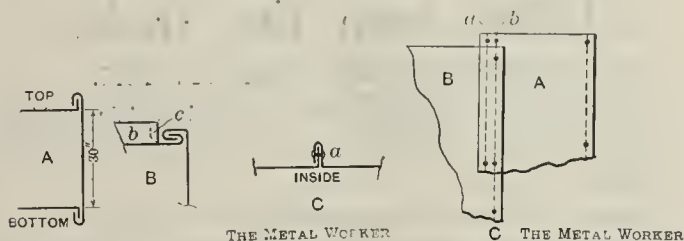


Fig. 2.—Method of Locking Seams.

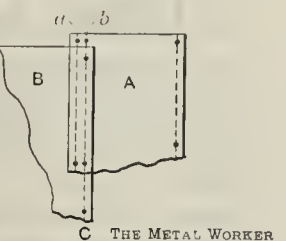


Fig. 3.—Method of Laying Out Sheets.

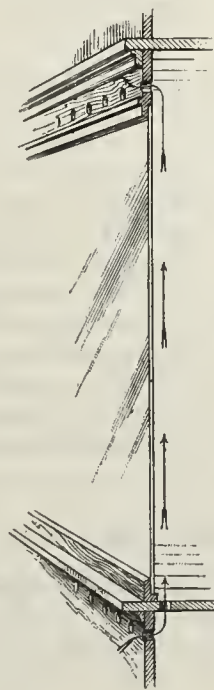
duct should be double seamed, as shown by A and B in Fig. 2. In A is shown the single edge turned up on top and bottom, while on the 30-inch depth of the duct is added the double edge, as shown, which is closed, using the "dolly and mallet," as at B. At C is shown the standing seam taken through r s in Fig. 1 and riveted at intervals, as at a in diagram C in Fig. 2. This standing lock should be made about 1 inch high, notching out at the ends where the doubled lock B takes place, as shown at b, and turning over a lap on the ends, as at c.

When laying out a large duct of this kind the floor is swept clean, a rough diagram made with chalk upon the same and the sheets dotted, as shown in Fig. 3, in which A is a sheet having a single and double edge and B a sheet having a single edge. The sheets are now laid over one another, so that the line c on the sheet B meets

the second line b on the sheet A, as shown. Of course the sheets should be made even at the ends, B being shown lower to indicate the method of lapping. When all the sheets are laid out to the required length of 31 feet tack the sheets to the floor with roofing nails and draw out the full sized duct, allowing for and notching the laps for double seaming. The sheets must then be marked and bent up on the brake, being careful to have all the numbers toward one side. The duct is then put together at the building, using band iron hangers to fasten against the ceiling or wall. It should be understood that the 30-inch depth of the duct is a plain strip with the necessary edges allowed, while the top and bottom have the standing seams.

FROST ON WINDOWS.

From R. C., Toronto.—I used to have a good deal of trouble with frost on my show windows, and last winter I bored some 5/8-inch holes under the window just below the floor, then a few holes through the floor as close to the window as possible, and another row of them near the ceiling, above the glass. My window is separated from the store by a glass partition. I find that since boring the holes I am never troubled with frost, for the



Circulation of Cold Air Preventing Frost from Forming on Glass.

cold air enters through the holes at the bottom of the window, driving the warm air out of the upper holes and making the temperature nearly as low as that outside, thus preventing the condensation of moisture on the glass.

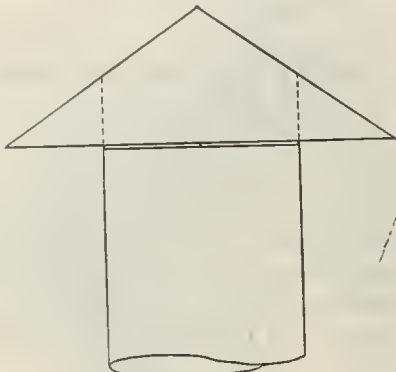
SUPERPHOSPHATE OF LIME.

From C. R., Pottstown, Pa.—Can *The Metal Worker* or some of its readers tell me what superphosphate of lime is and where I can buy it; also what substance I can use that contains the necessary amount of phosphate? I want to use it in the manufacture of phosphor metals, such as phosphor bronze.

Answer.—Superphosphate of lime is lime that contains an excessive proportion of phosphorus. It is principally derived from bones, which are calcined to drive off fatty matter and carbonic acid gas, which leaves the bones as a combination of lime and phosphorus. The calcined bones are then ground and treated with a solution of sulphuric acid and water, which converts part of the lime into a sulphate which is insoluble in water. The solution is then filtered to remove the sulphate; the liquor is concentrated and dried as a superphosphate of lime. This is melted with fine shavings of copper or tin in a crucible covered with charcoal powder, by which a phosphite of copper or tin is produced, which is used for making the alloy of phosphor bronze. The superphosphate can be obtained through the chemical trade.

CHIMNEY VENTILATORS FOR BACK DRAFT?

From I. E. D., Atlantic, Iowa.—In reply to the inquiry of "C. E. M." in *The Metal Worker* of November 23, I would say that I have had considerable trouble with back draft in chimneys, and where I could not get such a ventilator as mentioned in *The Metal Worker* I have made a cone top, as shown in the sketch. Make the cone large enough to come down even with the top of the pipe and leave a space of about $2\frac{1}{2}$ inches between the



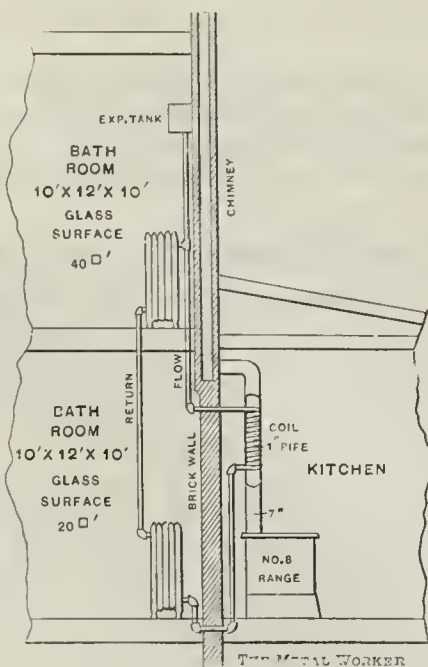
THE METAL WORKER

Chimney Ventilators for Back Draft?

cone and the top of the pipe to which it is attached. If "C. E. M." uses such a cap he will have no trouble with the back draft in his chimney, or, at least, I never have when I have used such a top. If he will turn to page 69 of *The Metal Worker* of November 23 he will see there two styles of the Dayton swinging chimney top, and if he uses either of them he will positively have no trouble. I am now using one of practically the same construction on the side of the roof of a church, where the ridge of the roof is 12 feet higher than the top of the chimney. With this chimney top the chimney works as well as if it rose clear above the roof.

UTILIZING WASTE HEAT.

From Southern Plumber, Georgia.—I would be glad to learn from the readers of *The Metal Worker* if the hot water heating job, as arranged in the sketch herewith, would circulate and heat satisfactorily. If so, how



THE METAL WORKER

Utilizing Waste Heat.

many feet of radiation should be placed in each room, and how many square feet of surface should be exposed in the pipe coil which is to heat the water? The building is of brick construction and the rooms to be heated have a northern and western exposure. The range has about 2 square feet of surface for heating a 52-gallon boiler and burns coal. What size should the

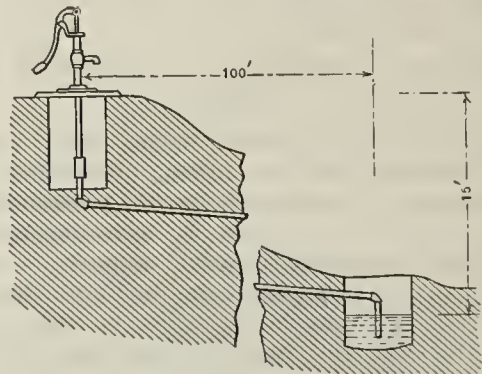
flow and return mains be? The coil for heating the water would have to be arranged in the second joint of the stove pipe, as shown.

PAINT FOR GALVANIZED IRON.

From the Joseph Dixon Crucible Company, Jersey City, N. J.—In answer to the inquiry of "B. B. C.," in *The Metal Worker* of November 30, we would suggest that the galvanized iron be cleaned of the grease or paraffin oil used in its manufacture. Sometimes the surface is not greasy and special treatment is not necessary. However, the iron is generally found more or less greasy, and this grease can be washed off by a solution of soda or soap and an alkaline solution. After this treatment the surface should be thoroughly washed, and after it is dry the Dixon silica-graphite paint can be applied, with our assurances that it will give a tenacious coating that will not peel, crack or blister.

LIFT PUMPS WITH LONG SUCTION PIPE.

From C. R., Fishkill, N. Y.—I should like to hear, through *The Metal Worker*, from some who have had experience regarding the best way to install lift pumps



Lift Pumps with Long Suction Pipes.

with long suction pipes at the extreme limits of lift, say 15 to 25 feet, when the pipe is 100 feet long. I would ask if air chambers on suction pipes have been found of advantage; also if a check valve on the suction pipe, between the pump and the foot valve at the end of the pipe, is of any benefit when $1\frac{1}{4}$ -inch pipe or larger is used. The sketch herewith gives an idea of the conditions to which I refer.

Letter from the Trade.

CONVICT LABOR COMPETITION.

A New Jersey manufacturer of Hollow Ware, Hardware Specialties, and other Cast Iron Goods writes as follows:

I note that labor organizations are taking strenuous measures in the matter of the Chinese Exclusion act. Is it not strange that a worse menace to labor than either the above or pauper labor should receive so little attention? I refer to the convict labor competition. New York State forbids it except for the use of charitable and other State institutions, and the plan works well. The State, through its representative, has a bill in Congress allowing States to forbid the product of convict labor being brought from States having a surplus of convict labor products. This is designed to save the mechanic from the dire effects of 15 to 25 cents a day jailbird competition. The bill is in a dark recess of some pigeon hole, and for some reason has remained there for several sessions of Congress. What is the reason for this, in view of the promised protection to American labor? Foreign countries do not allow convict made goods within their borders.

Vaseline, to which a small amount of powdered gum camphor has been added, the mixture being heated over a slow fire, is recommended as an excellent preventive of rust on tools.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin declined sharply, dropping about 7c. in price.
Copper is without change and demand light; market somewhat feverish.
Pig Lead is unchanged and quiet.
Spelter is quiet and firm.
Antimony is unchanged.
Nickel continues firm and active.
Aluminum is active at former prices.
Tin Plates are dull, with prices for spot ruling lower.
Sheets are still in active demand and scarce, but prices are softening under influence of competition.
Genuine Russia Iron Sheets are 1c. higher for heavier grades.
Sheet Copper continues firm, with fair demand.
Pig Iron is very firm and Foundry Irons for early delivery are higher.
Hardware continues in active demand at steady prices.
Plumbers' Supplies are still moving in good volume for the season, with prices firm.
Plumbers' Brass Goods are firm and prices are likely to be maintained.
Cast Iron Soil Pipe and Fittings are firm and in good demand.
Solder prices have been reduced about 2c. per lb.
Building Papers are active and prices have stiffened.
Wire Nails are in active demand; prices show some irregularity.
Cut Nails are firm, with some falling off in demand.
Wire is moving freely, with some unevenness in prices.
White Lead is quiet and unchanged.
Linseed Oil is lower.
Spirits Turpentine is strong, with moderate demand.
Old Metals are without change, except for Stove Plate Scrap, which is ½c. higher.

METAL MARKET.

NEW YORK, December 6, 1901.

Pig Tin.—The corner in Spot Tin, which last week shot prices up to extreme figures, is over and prices have again settled back to about normal values. Just before the close of the month the delayed steamers all arrived safely, and, being promptly discharged, relieved the stringency of the situation. Immediately the price of Spot Tin fell rapidly and continued to decline during the week. At the close the decline seemed to have been checked and prices stiffened again somewhat. Jobbers' prices are now about 7½c. lower than those ruling a week ago, small lots of Straits Pig being quoted at 26¼c. to 26¾c. per lb. The monthly statistics are viewed as being very unfavorable. The increase in the visible supply amounts to more than 2700 tons, being the largest for the year.

Charles S. Trench & Co., 81-83 Fulton street, New York, issued under date of December 2 the following review of the Pig Tin market:

During the past month, on account of small stocks and delayed arrivals, the fluctuations in price of Spot Tin have been sensational—opening price, 24.95c.; highest, 33.50c.; lowest, 24.80c., closing very nominal at 29.75c.

Estimated stocks on spot, New York, Philadelphia and Boston, November 1.....	Tons. 1,433
Actual arrivals during November.....	2,125

Estimated consumption during November.....	3,558
	2,100

Estimated stocks on spot, New York, Philadelphia and Boston, December 1.....	1,458
Actual afloat from East Indies, shipments to November 1, due late December.....	585

Actual afloat from East Indies, shipments to November 1, due January.....	2,225
Actual afloat from England, shipments to November 1....	947
Actual afloat from Continent, shipments to November 1...	30
Total visible supply, December 1.....	5,245
As against November 1.....	4,018
As against October 1.....	4,891
As against September 1.....	4,476

The explanation of relatively small deliveries to consumers during the month in spite of the general manufacturing business activity is that for the first 22 days of the month only 530 tons arrived from which shipments could be made, and stocks in store were so small that they were quickly depleted, and prices ruled for the latter part of the month at such excessive premiums over prices at which supplies were offered ex overdue steamers that every effort was made to avoid paying the scarcity price. With Spot Tin during the last ten days or more ruling at from 1c. to 7c. per lb. over which supplies could be obtained ex steamer overdue, and expected to arrive every day, not only have our consumers run down their stocks to nothing, but at least 150 tons were in the last ten days of the month hurriedly shipped back to New York by consumers and sold or exchanged for ex overdue steamers. Of the above 1458 tons, we estimate on spot December 1, not 50 tons is in store, the balance is on dock or in vessels at dock now being unloaded, and fully one-half of the dock amount is pledged to consumers who are clamorous for shipments. With a return to fairly normal conditions the demand for quick shipments will be large during December.

Copper.—It looks as if the crisis in Copper was close at hand. The market is entirely demoralized. The large interest which has upheld the price right along is reported in the trade to be about to give up the fight in this respect and declare an open market. All quotations are entirely nominal and only the most urgent purchases are being made. Small lots of Lake Copper are still quoted by jobbers at 17¼c. to 17½c., and Casting Copper at 16¾c. to 17c. per lb. Rumors of large sales of Copper at cut prices, or at present prices with a guarantee against decline, are discredited in the trade. It is held that, under conditions such as exist to-day, consumers would not enter the market under any circumstances. The course of the London market is taken to reflect the actual situation in Copper. Very large sales have been made there lately at prices equivalent to 12c. It is claimed that Copper could be bought here, refined and laid down at a price not exceeding 13½c.

Sheet Copper.—A fair demand continues for Sheet Copper, with no change in prices, which remain on the basis of 21c. per lb. Consumers, however, are evidently buying more conservatively, in view of the critical condition of the market for the raw material.

Pig Lead.—No change has taken place in the Pig Lead situation here. The market is quiet, and prices remain at the former level. American Pig in small lots is quoted at 4.55c. to 4.60c. per lb. St. Louis advices report no change in that market, a quiet business and the same range of prices ruling.

Spelter.—Business in Spelter is quiet, and prices are without change in any direction. Western brands in small lots are quoted at 4.55c. to 4.60c. per lb. It is reported that the proposed combination of producing interests will not be effected after all. St. Louis advices report considerable activity in the Spelter market at that point, heavy transactions having been effected with prices higher and offerings light.

Sheet Zinc.—The usual demand for Sheet Zinc is noted by jobbers who quote 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7¼c.

Antimony.—No change has taken place in this metal. Cookson's in small parcels is quoted at 10½c. to 11c., and Hallett's at 8½c. to 9c. per lb.

Nickel.—Is unchanged, prices continuing on the basis of 60c to 65c. per lb. for small lots.

Aluminum.—An active demand for Aluminum continues, and prices remain at 37c. per lb. for small lots of

No. 1 Ingot guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—The Tin Plate market is quiet and uninteresting. Business is of a limited character. The larger consumers appear to have covered their wants for the first quarter of 1902, which is as far as the American Tin Plate Company will make contracts. The smaller trade is quite active for the season, and supplies are somewhat more liberal. In consequence, jobbers have reduced their prices, which now rule considerably below the highest point reached during the late stringency. American Bessemer Coke Plates, IC, 14 x 20, are now obtainable at \$5.25 to \$5.75 per box. Terne Plates have also been reduced in price, and now rule fully \$1 a box lower than a week or two back. A further decline of 4½ pence per box in the price of Welsh Coke Plates took place this week.

A report on the British Tin Plate trade states that the wave of prosperity which has visited the trade during the last two years is now on the ebb. The works which have been restarted have caused the supply to outstrip the demand, and though it is difficult to obtain Plates for prompt delivery, prices for January and onward are considerably lower. Until the end of the year the works in general are pretty well engaged, and several are full till the end of January; but the majority of buyers are holding off.

Sheets.—The coming into the market of three or four of the new independent Sheet mills, which are ready to start and are soliciting orders vigorously, tends to soften the price of Sheets, although it is not yet apparent in the quotations of any of the makers, who are filled up with orders for some time ahead. As a matter of fact, supplies are just as difficult to get as ever, and a considerable scarcity still exists for some grades of Black Sheets. Orders are still coming in very freely, but the pressure that existed lately has relaxed in some degree. The mills are still a good deal behind with their orders, but are slowly catching up. No. 27 One Pass Cold Rolled Soft Steel Sheets are now quoted by jobbers at 4c. to 4.05c., and Galvanized at 65 to 67½ per cent. off the list. There is some scarcity in Genuine Russia Iron Sheets of the heavier gauges, which has caused an advance in the price of that material. Genuine Russia Iron Sheets, in small lots, are now selling as high as 14c. in some cases.

Chicago advices are as follows: There are many orders for Sheets running up into several hundred tons each. Mills do not seem to be gaining upon their orders and are still several months behind. Orders placed last summer are now being delivered. Prices are without change, though ranging more widely than when supply is normal. No. 27 Common is quoted 3.50c. to 3.70c., and Galvanized, 65 and 10 to 70.

Old Metals.—The market for Old Metals is inclined to dullness. Prices, while rather irregular, are without quotable change. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14¾c.
Light and Tinned Copper.....	per lb. 12¾c.
Heavy Brass.....	per lb. 9¾c.
Light Brass.....	per lb. 7½c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.
Tin Plate Scrap, per gross ton.....	\$6.50 to \$7.00
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.75 to 8.00
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—The majority of the furnaces tributary to this district are sold up for from four to six months, and yet the demand is not fully satisfied. There is some disposition among sellers to protect themselves by asking an advance upon present prices on deliveries during the next few months. Among the recent sales we note one lot of 3000 tons to a stove founder, the sellers being Eastern Pennsylvania and Virginia furnaces. We quote: No. 1, \$16.35 to \$17.50; No. 2 X, \$15.65 to \$16; No. 2 Plain, \$15.15 to \$16; Tennessee and Alabama brands,

No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—Melters of Pig Iron in this district have been driven to various expedients to keep their output from impairment in the present Coke scarcity. Some are using Anthracite Coal as a substitute for Coke. Foundrymen have been compelled also to resort to the partial use of off grades. It is not believed that the output of the foundries has been seriously affected by the Coke shortage, although an indefinite continuance of the present scarcity would lead to serious results. Local Irons are considerably stronger, prices being 50c. higher than a week ago. There is a marked reluctance among local producers to sell Iron for prompt or near-by shipments. A moderately large business has been transacted in lots running from 200 to 800 tons. We quote as follows:

Lake Superior Charcoal.....	\$18.00 to \$19.00
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	17.25 to 17.50
Southern Silvery, according to Silicon..	16.15 to 16.40
Southern Coke, No. 1.....	15.65 to 16.15
Southern Coke, No. 2.....	15.15 to 15.65
Southern Coke, No. 3.....	14.65 to 15.15
Southern Coke, No. 1 Soft.....	15.65 to 16.15
Southern Coke, No. 2 Soft.....	15.15 to 15.65

PHILADELPHIA.—A fair amount of business was closed during the week, and a great deal more could have been done if makers had held out inducements. Stocks are so much reduced that prompt shipments command extreme figures, as \$16 for No. 2 X and \$15.50 for No. 2 Plain. For the first and second quarters of 1902 it is probable that about 50c. less would be accepted. Meanwhile, makers are protecting their trade by adapting their quotations according to the quantity required, date for delivery, &c. On such a market it is difficult to give exact prices, but the range would be about as follows, the top figures being for early shipments for Philadelphia and nearby points: No. 1 X Foundry, \$16.25 to \$16.50; No. 2 X Foundry, \$15.75 to \$16, and No. 2 Plain, \$15.25 to \$15.50.

PITTSBURGH.—There is not much Iron being sold for the reason that the furnaces are sold up and have no prompt Iron to spare, and also because they cannot get cars enough to ship out the Iron they have already sold. Foundry Iron is very firm, and the furnaces report their product practically sold up for six months. We quote No. 1 Foundry Iron at \$16 to \$16.50, and No. 2 at \$15.50 to \$15.75, Pittsburgh.

CINCINNATI.—There has been but slight change in the general situation. Buying has not been so active as it was before prices were raised two weeks ago, but there has been nevertheless a fair run of orders averaging 200 to 500 tons. This from widely scattered consumers and from nearly all branches of the trade. Sellers are not pushing business and buyers will not be likely to seek much Iron from now until the first of the year, hence a seasonably quiet December is looked for. The great problem for all concerned is the shortage of cars and the difficulty in getting Iron moved is seemingly on the increase. Northern Irons are a little higher. Southern brands unchanged. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.25
Southern Coke, No. 3.....	to 13.75
Southern Coke, No. 4.....	to 13.25
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.25
Southern Coke, Gray Forge.....	to 13.25
Southern Coke, Mottled.....	to 13.25
Ohio Silvery, No. 1.....	\$15.60 to 16.10
Ohio Silvery, No. 2.....	15.10 to 15.60
Lake Superior Coke, No. 1.....	16.10 to 16.60
Lake Superior Coke, No. 2.....	15.60 to 16.10
Lake Superior Coke, No. 3.....	15.10 to 15.60

ST. LOUIS.—Transactions in the Pig Iron market continue along on about the same lines, and the volume of sales foot up to about the same total as for several weeks past. Orders average from 300 to 500 tons each. The Coke transportation situation among the Southern furnaces shows no signs of improvement. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.50 to \$15.75
Southern, No. 2 Foundry.....	14.75 to 15.00
Southern, No. 3 Foundry.....	14.25 to 14.50
Southern, No. 4 Foundry.....	13.75 to 14.00
No. 1 Soft.....	15.25 to 15.50
No. 2 Soft.....	14.75 to 15.25

CHICAGO REPORT.

Scrap Iron and Steel.—The market continues in a rather unsatisfactory condition. A report is being circulated of an attempt upon the part of some Scrap dealers to corner the market, they holding something like 40,000 tons. Mills are determined to resist the squeeze and have combined to keep prices from being advanced. The situation is interesting and promises to become more so before many days. We quote dealers' buying prices in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	8.00 to 8.25
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	..... to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	..... to 7.00
Old Boilers—whole (Iron).....	6.50 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.00 to 10.00
Old Gas Pipe and Boiler Tubes.....	10.50 to 11.50
Cast Borings.....	4.50 to 5.00
Turnings.....	9.50 to 10.00
Horseshoes.....	..... to 13.00

Old Metals.—The demand for Tin Foil continues the feature of the market, and dealers now quote 22½c. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	14¾c.
Copper Bottoms.....	13¾c.
Copper Clips.....	14¾c.
Red Brass.....	13¾c.
Yellow Brass.....	9¾c.
Red Brass Borings.....	11½c.
Yellow Brass Borings.....	8½c.
Light Brass.....	7½c.
Pipe Lead.....	4 c.
Tea Lead.....	3¾c.
Zinc.....	2.80c.
Tin Foil.....	22½c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	15 c.

Old Rubber.—The market continues as last reported. Rubber Shoes are still quite plentiful and price is a trifle lower. We quote as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	7¼c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—Market is unchanged. Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at .75c. to .85c. per 100 lbs. in any quantity.

Anthracite Coal.—The scarcity in Chestnut Coal continues, as does also the scarcity of cars. Prices are unchanged, as follows:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

There is a good volume of current business and the trade are evidently buying freely in most lines. Season goods are still commanding the attention of many of the larger merchants and a great many orders have been taken. Prices for Hardware both Shelf and Heavy, are as a rule steady. A few lines are regarded with especial caution as liable to yield something in price before long. A large proportion of the orders coming in to manufacturers are for early shipment to meet immediate wants or to supply waiting customers. Winter goods are in especial demand, and on some lines are developing a decided scarcity. Merchants with the opening of the last month of the year are entering upon preparations for the holiday trade, which promises to be large, in view of the prevailing prosperity and the increasing observance of the holiday season. Merchants who have not completed their arrangements for the Christmas and New Year trade may find it necessary to make special efforts to get some lines of goods in time. Preparation for the closing of the year and plans for the next naturally begin to occupy the attention of manufacturers, but the pressure of current business is still heavy. Questions in regard

to the outlook for the coming year—the continuance of the demand, the price of the raw material, the extent to which foreign trade will be developed—are being canvassed and optimistic views are generally entertained.

NOTES ON PRICES.

Plumbers' Brass Work.—The meeting of the Brass Association, which was scheduled to be held in Pittsburgh, Pa., on December 9, has been postponed. It will be held in Washington, December 11, a day previous to the meeting of the manufacturers and jobbers east of the Alleghany Mountains. It is expected that there will be no change in the prices now prevailing. From what can be ascertained, it appears that stocks of Brass Goods in jobbers' hands are very low, and this condition of affairs is not unknown to the Brass manufacturers. This fact alone should be sufficient to keep the present prices from being broken. Another feature of the Brass trade which will tend to keep prices up is that all of the manufacturers have considerable business now on hand, and, until their old orders are completed, there is no likelihood of a break in values.

Cast Iron Soil Pipe and Fittings.—The association controlling Cast Iron Soil Pipe and Fittings have recently acquired another member. The Birmingham Pipe & Castings Company of Birmingham Ala., have renewed their agreement with the association for another year. We understand that this was the only company who withheld their consent at the last meeting held in New York City, when the prices on Cast Iron Soil Pipe were reaffirmed. The signing of the Birmingham Pipe & Castings Company will materially strengthen the association. Jobbers should now have a stable market for at least a year to come.

Solder.—The sharp break in the price of Tin has been followed by the marking down of prices on Solder, which now rule about 2 cents below the figures of a week ago. Jobbers quote Half and Half, guaranteed, in small lots, at 17½c. to 18c. per lb., and No. 1 at 15½c. to 16½c.

Sheet Zinc, Nickel Plated.—A. Klein, 453-455 Broome street, New York, is the sole agent in the United States for German made Sheet Zinc, Nickel Plated on one side, manufactured by the German Nickel Zinc, Steel and Tin Sheet Factory, Essen, Germany. This Nickel Plated Zinc is used for the manufacture of a variety of specialties requiring a ductile metal not likely to tarnish. Importation orders, are taken f.o.b. Hamburg or Bremen. The material comes regularly in sheets 20 x 20 inches, in cases of 220 pounds, and 20 x 40 inches, in cases of 440 pounds. The following are the current net quotations for import, in German marks (24 cents) per 100 kg. (220 pounds):

Nos.	Gauge in millimeters, exact.	Approximate decimals of inch.	Marks per 100 kilos.
0.....	.050	.002	..
½.....	.075	.003	..
1.....	.100	.004	..
2.....	.143	.0055	98
3.....	.186	.0075	87
4.....	.228	.009	82
5.....	.250	.01	77
6.....	.300	.012	76
7.....	.350	.014	74
8.....	.400	.016	73
9.....	.450	.018	72
10.....	.500	.02	71
11.....	.580	.023	70.50
12.....	.660	.026	70
13.....	.740	.029	69.50
14.....	.820	.032	69
15.....	.950	.038	68.50
16.....	1.080	.04	68
17.....	1.210	.05	68
18.....	1.340	.052	68
19.....	1.470	.056	68
20.....	1.600	.063	68

Nos. 0, ½ and 1 can be made, but for ordinary use are too thin. This material, if necessary, can be supplied with both sides nickeled.

Building Papers.—The business in building papers is very good, and, as predicted some time ago, prices have stiffened somewhat. Manufacturers of Rosin Slized Sheathing, we are credibly informed, have recently agreed on a uniform price, which shows an advance over previous quotations of \$2 to \$3 a ton, the price in round lots being now \$25 per ton. By the roll, light, medium and heavy weights are quoted 32, 47 and 58 cents per

roll, respectively, equivalent to about \$32, \$31 and \$29 per ton, which is a delivered price. Deafening Felts, 9, 6 and 4½ square feet to pound, have been advanced to \$40 to \$42 per ton, an upward movement, however, that always occurs at this season of the year from the nature of the product. In Tarred Roofing Felt, one ply, the price has been advanced to \$28 to \$30 per ton, current prices on the two and five ply goods, remaining at 40 to 45 cents and 60 to 65 cents per roll respectively. This has been occasioned by an advance in the price of paper for the Saturated or Tarred Roofing Papers, which, in large lots to jobbers, is now \$38.50 per ton.

Wire Nails.—The continued demand for small lots of Wire Nails from store aggregates a considerable volume. Lower prices are reported as being made by outside mills. The influence of this competition is naturally in the direction of a reduction in prices, but the market is steadied to a good degree by the strength in Rods and Billets, which justifies the maintenance of the price of Wire products at a point not much below the present level. Small lots of Wire Nails from store, New York, are quoted at \$2.35 to \$2.40 per keg.

Cut Nails.—The near approach of prices at which Wire Nails can be purchased to Cut Nail quotations is causing a falling off in the demand for the latter. The Cut Nail market, however, is firm, small lots from store, New York, ruling at about \$2.25 per keg.

Wire.—Makers of Poultry Netting and other Wire products are placing liberal orders in anticipation of an active demand for the coming spring. There is some unevenness of prices, small lots of Plain Wire, New York, being quoted at about 2.55c., and Galvanized at 2.95c.

Window Glass.—The local Window Glass market remains in about the same condition as last week. The demand is light, with prices ranging from 90 to 90 and 5 per cent. discount.

White Lead.—The market for White Lead in Oil has been quiet and featureless. The outlook for the future is viewed with a good deal of confidence by the trade in general. In a retail way, White Lead in Oil is selling at 7 to 7¼ cents per pound.

Spirits Turpentine.—The local market is strong, owing to favorable reports from the South. The demand here is limited, with prices firm. Moderate sized lots from store are quoted at from 38½ to 39 cents per gallon.

Old Rubber.—A fairly good business is noted, and prices are well maintained, except for Rubber Shoes, which rule lower. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb. 5¼c.
Rubber Shoes, less than carloads, per lb. 7 to 7¼c.
White Wringer Rolls, per lb. 7½c.
Inside Bicycle Tubing, per lb. 21½c.
Outside Tubing, per lb. 7c.

TRADE NOTES.

F. W. DEVOE & Co., New York, are distributing a neat folder calling attention to their Pure Lead and Zinc Paints, which they state are strictly pure and free from all form of adulteration. These Paints are sold ready for use without any further mixture.

In our advertising columns this week appears a notice from Blake & Andros, manufacturers of B. & A. Elbow Valves and Kerosene Heaters, 28 Portland street, Boston, Mass., offering showroom space in a central location in that city, wherein they are prepared to represent one or more specialties in addition to their own established business.

THE NEW YORK METAL SPECIALTY MFG. COMPANY of New York City have been incorporated with a capital of \$10,000. The directors are A. W. Hoffman, Philip Harnischfeger and Adam P. Dienst of New York City.

"A TREATISE ON THE PRESERVATION OF METAL" is the title of a little book by Lionel M. Stern of Cleveland, Ohio, written in the interest of all who require a coating on metallic surfaces for their preservation.

THE JOSEPH DIXON CRUCIBLE COMPANY of Jersey

City, N. J., are sending out a small calendar blotter for December in the interest of Dixon's American Graphite Pencils.

Changes in Mexican Customs Tariff.

The President of the republic of Mexico has issued a decree instituting certain changes in the customs tariff of that country. Among the changes we note the following in which our readers are interested:

Tin in bars or in bulk.....	Per gross klllo.	\$0.12
Lead in bars or plgs.....	" " "	.03
Lead goods, not otherwise specified.....	" " "	.08
Lead in sheets or piping, and glaziers' lead..	" " "	.05
Manufactured goods of tin, tinned or nickel plated iron, either wholly or in part, not otherwise specified.....	" " "	.20
Iron or steel ware, enameled either wholly or in part, not otherwise specified.....	" " "	.15
Nails, screws, bolts, nuts and rivets, of iron or steel.....	" " "	.10
Tanks, cisterns, receptacles or vats of iron or steel, with more than 2500 liters capacity	" " "	.01
Iron or steel wire cloth of all kinds.....	" " "	.10
Suction and force hand pumps, with spare or repair pieces.....	" " "	.01
Emery in powder or grain.....	" " "	.01
Black plumbago.....	" " "	.05
Paints in powder or crystals.....	" " "	.07
Prepared paint.....	" " "	.12
Tiles, ridge boards and ventilators of clay for roofs, and drain pipes of clay, per 1000.....		2.50

The decree became effective November 1, 1901.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED DECEMBER 6, 1901.

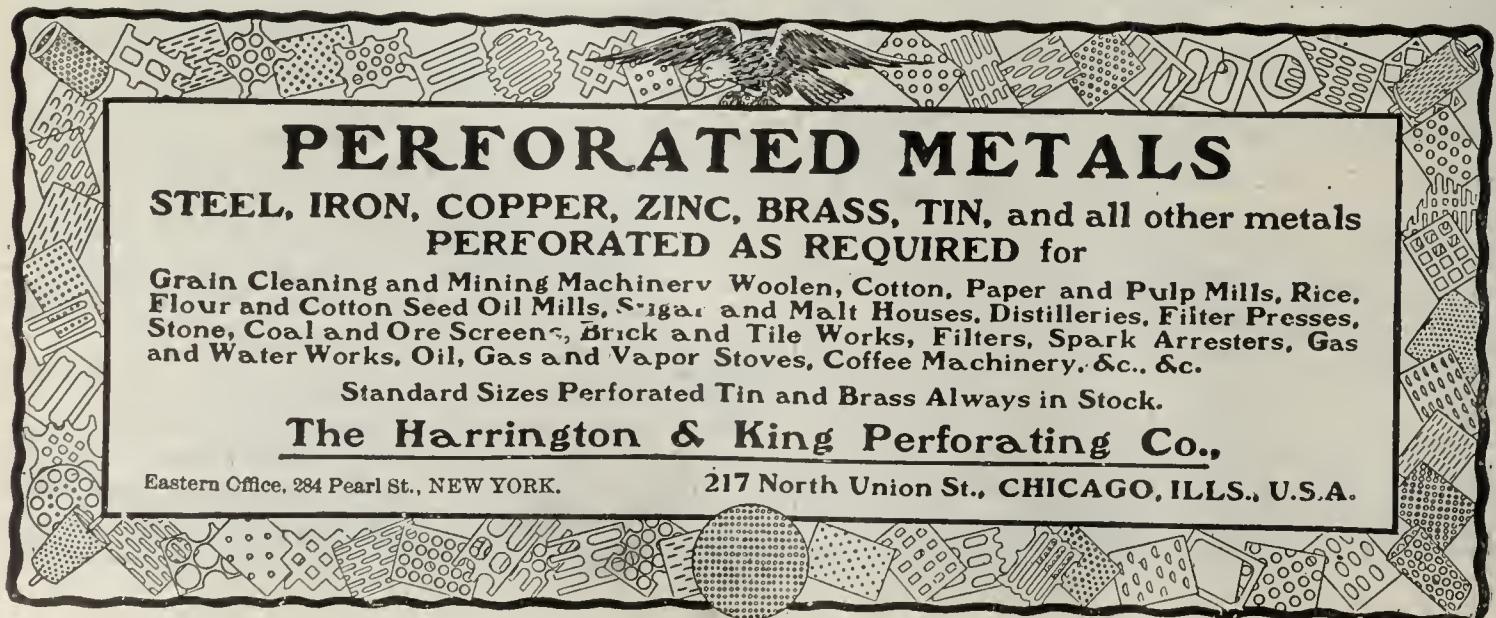
Aluminum— No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. Small lots..... 37¢ 100-lb lots..... 35¢ Aluminum Sheet, B. & S. gauge. In lots of 50 lbs or more. Wider than..... 14-in. 24-in. 30-in. And including..... 14-in. 24-in. 30-in. Nos. 13 to 19..... \$0.42 \$0.44 \$0.47 " 20..... 44 46 51 " 21 to 23..... 46 48 51 " 24..... 46 50 53 " 25..... 47 51 54 " 26..... 47 54 59 " 27..... 48 57 62 " 28..... 48 57 64 " 29..... 49 60 69 " 30..... 50 64 77 Note.—Lots of less than 50 lbs 5¢ per lb extra.		Iron, Sheet—Black. One Pass, C. R., R. G. Soft Steel. Cleaned. Nos. 14 to 16..... 3.65 3.70¢ Nos. 18 to 21..... 3.75 3.80¢ Nos. 22 to 24..... 3.85 3.90¢ Nos. 25 and 26..... 3.95 4.00¢ No. 27..... 4.05 4.10¢ No. 28..... 4.15 4.20¢ <i>Russia, Planished, &c.</i> Genuine Russia, accord- R. G. ing to assortment..... 11@14 ¢ Do. Stained..... 6@10 1/2 ¢ Patent Planished, 1/2 A. 12¢; B. 11¢ net <i>Galvanized.</i> Nos. 10 to 16..... 12¢ Nos. 17 to 21..... 13¢ Nos. 22 to 24..... 14¢ Nos. 25 to 26..... 15¢ No. 27..... 16¢ No. 28..... 17¢ No. 29..... 18¢ No. 30..... 21¢ 36 in. 1¢ per lb higher.		Registers— List Sept. 2, 1901. Black Japanned..... 60¢@10¢@60¢@10¢5¢ White Japanned..... 60¢@10¢@60¢@10¢5¢ Nickel Plated..... 60¢@10¢@60¢@10¢5¢ Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... 60¢@10¢@60¢@10¢5¢ Electroplated in Brass, Bronze or Copper..... 60¢@10¢@60¢@10¢5¢ White Porcelain..... 60¢ Solid Brass and Bronze Metal..... 50¢ Roofing Material— 1 Ply Tarred Paper, 20 ton, \$28.00@38.00 2 Ply Tarred Paper..... roll, 108 sq. ft. 45¢@50¢ 3 Ply Tarred Paper..... roll, 108 sq. ft. 65¢@75¢ Slater's Felt..... roll 500 sq. ft., 50¢@60¢ Roofing Pitch..... bbl. \$2.35 Rosin— Common and Good—Strained. Rosin, C. & D..... bbl. \$1.50 @ \$1.55 Rosin, E. & F..... bbl. 1.60 @ 1.65 Rosin, G. & H..... bbl. 1.70 @ 1.75 Rosin, I. & K..... bbl. 1.80 @ 2.40 Rosin, M. & N..... bbl. 2.90 @ 3.50 Shoes and Elbows— See Elbows and Shoes. Slate Roofing— f. o. b. cars, Quarry Station. According to size. <i>Pennsylvania:</i> Best Bangor, 3/4 sq. \$3.25@3.50 No. 1 Bangor Ribbon, 3/4 sq. 3.00@ 3.50 Pen Argyle, 3/4 sq. 3.00@ 3.75 Peach Bottom, 3/4 sq. 4.85@ 5.60 No. 1 Boys, 3/4 sq. 3.35@ 3.55 No. 1 Chapman Keystone 3/4 sq. 3.25@ 4.25 <i>Vermont:</i> Sea Green, 3/4 sq. \$2.00@3.15 Purple, 3/4 sq. 3.75@ 4.25 Unfading Green, 3/4 sq. 3.25@ 4.50 Rei. 3/4 sq. 6.50@11.00 <i>Maine:</i> Brownville, Unfading Black: No. 1 quality..... \$3.25@7.50 No. 2 quality..... \$1.25@6.00 Solder— 1/2¢ guaranteed..... 17 1/2 ¢@18 ¢ No. 1..... 15 1/2 ¢@16 1/2 ¢ Prices of Solder indicated by private brands vary according to composition. Soldering Fluids— —Per Pound.— Barrels Smaller Q'tities Concentrated Flux..... 4c 5c Eureka Flux: Triple Strength..... 3c 3 1/2 ¢ Extra Concentrated..... 4 1/2 ¢ 5c Crystal..... 7c Gedney's Fluid..... 2c Lennox Fluid..... 2c Perfection Flux..... 3c 3 1/2 ¢ Yager's Salts, 1 lb. bottles..... each, 50¢ 5 lb. bottles, per lb., 45¢ Soldering Coppers— Per lb..... 22¢@24¢ Spelter— Western Spelter..... 4 1/2 ¢@4.60¢ Spiral Pipe— See Conductors. Stove Pipe Elbows— See Elbows, Stove Pipe. Stove Trucks— See Trucks, Stove.		Strainers, Conductor— Galvanized..... 50¢ Tin Pigs and Bars— Banca, pigs, 20 lb..... 26 1/2 ¢@27 ¢ Straits, pigs, 20 lb..... 26 1/2 ¢@26 3/4 ¢ Straits, in bars, 20 lb..... 27 1/2 ¢@27 3/4 ¢ Tin Plates, American Charcoal Plates, Bright— N. B.—The price of 20 x 28 sizes is double the price of 14 x 20. Calland Grade: IC, 14 x 20..... \$7.50 IX, 14 x 20..... 9.00 IXX, 14 x 20..... 10.25 IXXX, 14 x 20..... 11.50 IXXXX, 14 x 20..... 12.75 Melyn Grade: IC, 14 x 20..... 7.00 IX, 14 x 20..... 8.50 IXX, 14 x 20..... 9.75 IXXX, 14 x 20..... 11.00 IXXXX, 14 x 20..... 12.25 Allaway Grade: IC, 14 x 20..... 6.50 IX, 14 x 20..... 7.60 IXX, 14 x 20..... 8.70 IXXX, 14 x 20..... 9.80 IXXXX, 14 x 20..... 10.90 Coke Plates, Bright— Bessemer Steel, or equal to J. 10, 14 x 20..... \$5.50@5.75 B. Grade, full weight IX, 14 x 20..... \$6.25@6.75 N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows: 100 lb..... 15¢ 95 lb..... 20¢ 90 lb..... 25¢ 85 lb..... 30¢ Terne Plates— N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward. About 40 lb coating..... \$16.50@17.00 About 40 lb coating..... 15.75@16.25 About 20 lb coating..... 13.75@14.25 About 15 lb coating..... 11.75@12.25 About 8 lb coating..... @10.50 Boiler Plates, American— IXX, 14 x 26.. (112 sheets)..... \$12.50 IXX, 14 x 28.. (112 sheets)..... 13.50 IXX, 14 x 31.. (112 sheets)..... 15.00 Troughs, Eave— See Eave Trough. Trucks, Stove— Improved Lock Frame, per doz. \$15.00 Steel Lock Frame, per doz..... 18.00 Daisy Improved pattern, 2 doz..... 18.00 Tubes and Tubing— Brazed Brass, List Feb. 26, 1896. 30¢@35¢ Copper and Bronze, 3¢ per lb. list more than Brass. Seamless Brass Tubes, net list Feb. 6, 1899. Tin..... 50¢ Galvanized..... 50¢ Fittings for do..... 40¢ Zinc— 600 lb casks per lb..... 6 1/2 ¢ Per lb..... 7 1/2 ¢
Antimony— Cookson..... 10¢@11¢ Hallett's..... 8 1/2 ¢@9 ¢ U. S..... 8 1/2 ¢@9 ¢ Brass, Roll and Sheet..15¢@20¢ Conductors— Corrugated. <i>Round or Square.—</i> Galvanized 1/2 or more, N's't'd..... 70¢5¢ Not Nested..... 70¢2 1/2 ¢ Plain Round, 1/2 or more..... 70¢5¢ Nested..... 70¢5¢ Galvanized, Plain Round, Not Nested..... 70¢2 1/2 ¢ Spiral Riveted. Galvanized..... 40¢ See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor. Conductor Strainers— See Strainers, Conductor. Copper— Lake Ingot..... 17 1/2 ¢@17 1/2 ¢ Casting..... 16 1/2 ¢@17 ¢ Sheet and Bolt..... 21¢ per lb basis Cold Rolled Sheets..... 22¢ per lb basis Cold Rolled and Polished Sheets..... 23¢ basis Planished Sheets..... 24¢ basis Bottoms, Pits and Flats..... 25¢ basis Eave Trough, Galvanized Territory..... L. C. L. Eastern..... 75¢@10¢ Carloads Central..... 75¢@7 1/2 ¢ extra Southern..... 70¢@12 1/2 ¢ S. Western..... 70¢@10¢ Terms, 2% for cash. Eave Trough Mitres— Lap or Slip Joint..... list, 25¢ Elbows—Plain Adjustable— Eastern List. Tin..... 30¢ Galvanized..... 30¢ Perfect Elbows..... 40¢ Stove Pipe— Four-Piece No. 1, 4 1/2 5 5 1/2 6-Inch. No. 2, .65 .70 .75 .80 .85 No. 3, .60 .63 .65 .70 .80 Elbows and Shoes— Galvanized..... 60¢ Gasoline— See Petroleum Products.		Lead— American Pig..... 4.62¢@4 7/8 ¢ Bar..... 5 1/2 ¢@5 1/2 ¢ Pipe..... 4 1/2 ¢@5 1/2 ¢ off Tin Lined Pipe..... 12 1/2 ¢@20¢ off Block Tin Pipe..... 37 1/2 ¢@20¢ off Sheet Lead, full rolls..... 7 1/2 ¢@20¢ off Sheet Lead, cut..... 7 1/2 ¢@20¢ off Old Lead in exchange, 1¢ per lb. Mitres, Eave Trough— See Eave Trough Mitres. Nickel— Per lb..... 60¢@65¢ Paints, Oils, &c.— Leads— Lead, American White, in Oil; Lots of 500 lb or over..... @ 6 1/2 ¢ Lots less than 500 lb..... @ 7 ¢ Lead, White, in oil, 25 lb tin pails, add to keg price..... @ 1/2 ¢ Lead, White, in oil, 12 1/2 lb tin pails, add to keg price..... @ 1 ¢ Lead, White, in oil, 1 to 5 lb as- sorted tins, add to keg price..... @ 1 1/2 ¢ Lead, White, Dry in bbls..... 5 1/2 ¢ @ 6 ¢ Lead, Red, bbls, 1/2 bbls, and kegs: Lots 500 lb or over..... @ 6 ¢ Lots less than 500 lb..... @ 6 1/2 ¢ Oils— Linseed, City, raw..... 55¢@57¢ Linseed, City, boiled..... 57¢@59¢ Linseed State and West'n, raw..... 55¢@57¢ Spirits Turpentine— In Southern bbls..... 37 1/2 ¢@38 ¢ In machine bbls..... 38 1/2 ¢@39 ¢ Putty— In bulk..... \$1.25 In bladders..... 2.25 In cans 12 lb to 25 lb..... 2.25 In cans 1 lb to 5 lb..... 3.25 Petroleum Products— In Barrels (Barrel Included) Stove Gasoline..... 12 1/2 ¢@13 ¢ Kerosene..... 13 ¢@13 1/2 ¢ Pipe, Drain..... 40¢ Pipe, Spiral— See Conductors.				

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized— Standard Boilers: 30 gal..... 70¢@10¢ 35 and 40 gal..... 70¢ Other sizes up to 52 gal..... 60¢@60 1/2 ¢ 52 gal. and above..... 60¢ Extra Heavy Boilers: 18 to 52 gal..... 60¢ 53 gal. and above..... 55¢ Brass Work, Plumbers'— List of December 7, 1896. Compression: Basis Cocks..... 60¢ Bath Cocks and Double Bath Cocks..... 65¢ Bibs..... 65¢ Wibs, Flanged..... 65¢ Fuller: Bibs..... 70¢ Basis Cocks, Nos. 1 to 4..... 70¢ Bath Cocks, No. 4..... \$2.40 each net Ground Key Work: Finished Bibs..... 55¢@5¢ Rough Bibs and Stops..... 70¢ Rough Stop and Stop and Waste..... 70¢@70 1/2 ¢ Cocks..... 70¢@70 1/2 ¢ Rough Stop and Stop and Waste..... 65¢@65 1/2 ¢ Cocks, Patented..... 65¢@65 1/2 ¢ Miscellaneous— Basis Clamps..... 60¢@65¢ Basis Clamps..... 60¢@65¢ Chain Stays..... 60¢@5¢@70¢ Iron Boiler Couplings: Lead Pipe, Iron Pipe. Plain Face, 3/4 set \$0.95 \$1.05 Ground Face 3/4 set \$1.00 \$1.10 Sink or Bath and Wash Tray Plugs, 60¢@65¢ Soldering Nipples..... 70¢@75¢ Soldering Unions..... 70¢@75¢ Union Elbows, Hot Water Heating..... 75¢@75 1/2 ¢		Cocks, Valves, &c.— Cocks— Brass— Air and Radiator Air..... 75¢@75 1/2 ¢ Gas Meter and Union Meter..... 65¢@70¢ Steam..... 65¢@70¢ Iron— All Iron..... 70¢@70 1/2 ¢ Iron with Brass Plugs..... 65¢@70¢ Valves— Brass— Check..... 65¢@70¢ Garden Hose..... 65¢@10¢@70¢ Gate..... 65¢@65 1/2 ¢ Globe and Angle, hose outlet..... 65¢@65 1/2 ¢ Globe, Angle and Cross..... 65¢@10¢@70¢ Horizontal, Vertical and Angle Check..... 65¢@65 1/2 ¢ Hot Water Radiator..... 75¢ Radiator..... 70¢@10¢ Safety..... 65¢ Safety, Low Pressure..... 65¢ Jenkins' Disc: Check..... 65¢ Gate..... 65¢ Globe, Angle and Cross..... 70¢ Radiator..... 80¢ Radiator, Corner..... 75¢ Safety..... 65¢ Iron— Iron Body..... 70¢@70 1/2 ¢ Foot..... 65¢@70¢ Jenkins Bros.: All Iron, except Gate..... 40¢@5¢ All Iron Gate..... 35¢@40¢ Iron Body, except Gate..... 60¢ Iron Body Gate..... 60¢@5¢ Swing Check..... 50¢ Earthenware— Brown Glazed..... 20¢		Porcelain, List of Aug. 15, 1901: Basins, Urinals and Hoppers..... A, 30¢ Closet Bowls, Sundries, Wash- B, 40¢ outs and Pedestals..... C, 50¢ Fittings— Brass Fittings— Finished..... 70¢@75¢ Rough..... 70¢@75¢ Bushings..... 70¢@75¢ Nipples..... 70¢@70 1/2 ¢ Unions, Rough and Finished..... 70¢@70 1/2 ¢ Iron— Cast Iron Fittings, Black and Galva- nized, Standard sizes..... 65¢@70¢ Cast Iron Bushings and Plugs..... 65¢@75¢ Cast Iron Flanges..... 65¢@70¢ Cast Iron Floor Flanges..... 65¢@75¢ Malleable Iron Fittings..... 70¢@75¢ " Bushings..... 70¢@70 1/2 ¢ " Unions..... 70¢@10¢@75¢ " Unions, Flange 60¢@10¢@70¢ " Pipe Hangers, Universal..... 50¢ Wrought Iron Nipples..... 70¢@75¢ " Couplings..... 60¢@65¢ " Long Screws..... 60¢@65¢ Lavatories— Porcelain Enameled Iron..... 80¢@30¢@10¢ Oakum— Plumbers' Oakum, 50 lb. bales, 2 1/2 ¢ Pipe— Brass, Iron Pipe Size— 1/4 1/2 3/4 1 1/2 2 1/2 3 1/2 4 1/2 5 1/2 6 1/2 8 1/2 10 1/2 12 1/2 14 1/2 16 1/2 18 1/2 20 1/2 22 1/2 24 1/2 26 1/2 28 1/2 30 1/2 32 1/2 34 1/2 36 1/2 38 1/2 40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 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826 1/2 828 1/2 830 1/2 832 1/2 834 1/2 836 1/2 838 1/2 840 1/2 842 1/2 844 1/2 846 1/2 848 1/2 850 1/2 852 1/2 854 1/2 856 1/2 858 1/2 860 1/2 862 1/2 864 1/2 866 1/2 868 1/2 870 1/2 872 1/2 874 1/2 876 1/2 878 1/2 880 1/2 882 1/2 884 1/2 886 1/2 888 1/2 890 1/2 892 1/2 894 1/2 896 1/2 898 1/2 900 1/2 902 1/2 904 1/2 906 1/2 908 1/2 910 1/2 912 1/2 914 1/2 916 1/2 918 1/2 920 1/2 922 1/2 924 1/2 926 1/2 928 1/2 930 1/2 932 1/2 934 1/2 936 1/2 938 1/2 940 1/2 942 1/2 944 1/2 946 1/2 948 1/2 950 1/2 952 1/2 954 1/2 956 1/2 958 1/2 960 1/2 962 1/2 964 1/2 966 1/2 968 1/2 970 1/2 972 1/2 974 1/2 976 1/2 978 1/2 980 1/2 982 1/2 984 1/2 986 1/2 988 1/2 990 1/2 992 1/2 994 1/2 996 1/2 998 1/2 1000 1/2 1002 1/2 1004 1/2 1006 1/2 1008 1/2 1010 1/2 1012 1/2 1014 1/2 1016 1/2 1018 1/2 1020 1/2 1022 1/2 1024 1/2 1026 1/2 1028 1/2 1030 1/2 1032 1/2 1034 1/2 1036 1/2 1038 1/2 1040 1/2 1042 1/2 1044 1/2 1046 1/2 1048 1/2 1050 1/2 1052 1/2 1054 1/2 1056 1/2 1058 1/2 1060 1/2 1062 1/2 1064 1/2 1066 1/2 1068 1/2 1070 1/2 1072 1/2 1074 1/2 1076 1/2 1078 1/2 1080 1/2 1082 1/2 1084 1/2 1086 1/2 1088 1/2 1090 1/2 1092 1/2 1094 1/2 1096 1/2 1098 1/2 1100 1/2 1102 1/2 1104 1/2 1106 1/2 1108 1/2 1110 1/2 1112 1/2 1114 1/2 1116 1/2 1118 1/2 1120 1/2 1122 1/2 1124 1/2 1126 1/2 1128 1/2 1130 1/2 1132 1/2 1134 1/2 1136 1/2 1138 1/2 1140 1/2 1142 1/2 1144 1/2 1146 1/2 1148 1/2 1150 1/2 1152 1/2 1154 1/2 1156 1/2 1158 1/2 1160 1/2 1162 1/2 1164 1/2 1166 1/2 1168 1/2 1170 1/2 1172 1/2 1174 1/2 1176 1/2 1178 1/2 1180 1/2 1182 1/2 1184 1/2 1186 1/2 1188 1/2 1190 1/2 1192 1/2 1194 1/2 1196 1/2 1198 1/2 1200 1/2 1202 1/2 1204 1/2 1206 1/2 1208 1/2 1210 1/2 1212 1/2 1214 1/2 1216 1/2 1218 1/2 1220 1/2 1222 1/2 1224 1/2 1226 1/2 1228 1/2 1230 1/2 1232 1/2 1234 1/2 1236 1/2 1238 1/2 1240 1/2 1242 1/2 1244 1/2 1246 1/2 1248 1/2 1250 1/2 1252 1/2 1254 1/2 1256 1/2 1258 1/2 1260 1/2 1262 1/2 1264 1/2 1266 1/2 1268 1/2 1270 1/2 1272 1/2 1274 1/2 1276 1/2 1278 1/2 1280 1/2 1282 1/2 1284 1/2 1286 1/2 1288 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ALPHABETICAL LIST OF ADVERTISERS.

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Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Gurney & Co., Boston, Mass.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Schneider & Trenkamp Co., Cleveland, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
- Stoves and Ranges, Gas.**
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Economy Stove & Mfg. Co., Detroit, Mich.
- Stoves and Ranges, Oil, Vapor and Gasoline.**
Hessler, H. E. Co., Syracuse, N. Y.
Schneider & Trenkamp Co., Cleveland, O.
- Street Lamps, Gasoline.**
Merkel, H., St. Louis, Mo.
- Tank Heaters.**
American Radiator Co., Chicago, Ill.
- Tanks, Steel and Wood.**
Edwards, J. H., 59 Park Place, N. Y.
- Terne Plates.**
American Tin Plate Co., New York.
- Tinners' Tools, Machines and Supplies.**
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.
- Tinners' Trimmings.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Tin Plate.**
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
- Tin Scrap.**
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Sreator, Ill.
- Tools and Machines, Steam and Gas Fitters'.**
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.
- Torches, Plumbers.**
American Distributing Co., Syracuse, N. Y.
Clayton & Lambert Mfg. Co., Detroit, Mich.
- Valves.**
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.
- Ventilators and Chimney Caps.**
Berger Bros. Co., Phila., Pa.
Downman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Rosen, D. J., 439 Canal St., N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.
- Washers, Valves, &c.**
Marston, I. G. & Co., Boston, Mass.
- Washing Machines.**
Boss Washing Machine Co., Cincinnati, Ohio.
Wayne Anthony Mfg. Co., Ft. Wayne, Ind.
- Water Coolers.**
National Enamelling & Stamping Co., 78 Beekman St., N. Y.
- Water Closets.**
Colwell Lead Co., 83 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.
- Water Fronts.**
Clark, Henry N. Co., Boston, Mass.
- Water Heaters.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Ct.
- Wiping Cloths.**
Allbe Chas. A., Springfield, Mass.

SEE ALPHABETICAL INDEX, PAGE 54.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

TO ALL PARTS UNITED STATES, BRITISH AMERICA, AND MEXICO,	\$1.00 A YEAR.
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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be enclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

SUPERINTENDENT OF FOUNDRY, understanding thoroughly the molding, pattern and mounting business pertaining to the manufacture of stoves, ranges, furnaces and house heating boilers: New England man preferred; state experience, where now employed, salary expected, and how soon could leave present position; good opportunity for advancement. "H. D. J.," care *The Metal Worker*, New York. Dec. 7

GALVANIZING FOREMAN wanted who can construct and manage small plant. "Confidential," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Dec. 7

At once, a first-class **TINSMITH** who understands furnace and bench work and general jobbing in country town 40 miles from New York; a yearly job at good wages; must be steady and sober. "Yearly," care *The Metal Worker*, New York. Dec. 7

For 1902, a first-class **SALESMAN** with an acquaintance with trade in New York and adjacent territory; references; state salary expected, age and experience. "Experienced Man," care *The Metal Worker*, New York. Dec. 7

By a manufacturer of gas ranges, a man to fill the position of **INSPECTOR**; must understand thoroughly the requirements of the position; kindly give experience and salary wanted; a permanent position to the right man. "Gas Range Manufacturer," care *The Metal Worker*, New York. Dec. 7

SPINNER for sheet metal; must be first-class; highest wages. Apply to the Pedlar Metal Roofing Company, Oshawa, Canada. Dec. 7

Immediately, two good **SLATE ROOFERS**. Apply to the Peet & Schuster Company, Springfield, Ohio. Dec. 7

Young man about 20 to 25 with experience on roof and furnace work, in a regular jobbing shop; must be a hustler; German preferred; state wages; a steady job to the right man. William Pahland, 415 Richmond Terrace, New Brighton, S. I., N. Y. Dec. 7

Two first-class **TINNERS** and **SHEET IRON WORKERS**; must be sober and strictly business-like. A. J. Shide, 103 South Forsyth street, Atlanta, Ga. Dec. 7

At once, an up to date **TRAVELING MAN** who can show a good selling record; one that has an acquaintance among the hardware and implement trade in Iowa preferred and capable of selling a varied line to the above class of trade. Address Lock Box 712, Des Moines, Iowa. Dec. 7

A **HOUSE HEATING BOILER SALESMAN** of experience, with A1 reference; must be of good character and habits; give full particulars, with salary expected. "Character," care *The Metal Worker*, New York. Dec. 7

A first-class **TINSMITH** and **GALVANIZED IRON WORKER**; one that knows how to cut and put up cornice and do job work in a tin shop. Geo. A. Brush, Austin, Texas. Dec. 7

At once, a good, sober, competent **TINNER, PLUMBER** and **FURNACEMAN** for inside and outside work; steady job for the right man; state wages expected and give references; good college town. N. B. Twogood, Mount Vernon, Iowa. Dec. 7

SUPERINTENDENT for a stove and range manufacturing business; one who is thoroughly familiar with the construction of stoves and steel ranges, also must have some experience in nickel room; references required; young man preferred. "W. H.," care *The Metal Worker*, New York. Dec. 7

Young, experienced **STOVE SALESMAN** for Iowa and Illinois; also one for city trade. Box 176, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

January 1, 1902, a first-class **TINNER** at inside and outside work, hot air furnace, steam and hot water, some plumbing and wind mill work; wages \$12 per week; steady work the year round; must be honest, sober and industrious, with some knowledge of hardware; give references. Box 177, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

First-class **SALESMEN** for Southern Michigan by one of the leading stove manufacturing concerns; must be able to give best of references. "G. B.," care *The Metal Worker*, New York. Dec. 7

A good **TINNER** and **SLATE ROOFER**; none but first-class men need apply: a man of stable character and reliability can find permanent employment and good wages. W. H. Fledderjohan, New Knoxville, Ohio. Dec. 7

FOREMAN in cornice and skylight shop; one that can do drafting, cutting and estimating; permanent position with good salary to the right man; state age, experience, &c. Box 178, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

Experienced **HEATING EXPERT** to manage the hot water heater department of a well established concern making stoves and heaters; only practical, competent man wanted who can furnish good references. Box 180, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

STOVE and **FURNACE SALESMEN** for Illinois, Iowa, Wisconsin, Minnesota and the Dakotas, by an established concern; only experienced men with good references need apply. Address Box 181, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

MANAGER for our hotel ware department; we make steel ranges, portable ovens, urns and entire kitchen equipment for hotels and institutions; only men who can command trade in this branch wanted; give references. Box 182, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

Man who has had experience in handling gas range business to manage this department for a well equipped stove foundry; give references. Box 183, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

A good **TINNER**, understanding all the branches, also furnace work and plumbing, thoroughly; young man of good habits preferred; steady work. "D. P. B.," Forestville, N. Y. Dec. 7

TIN SHOP FOREMAN; must be strictly temperate, skillful, nonunion, familiar with furnace work, light and heavy iron and pitted tinware; address in own handwriting, stating age, experience, references and wages expected, for two weeks, "Tin Shop," Portland Stove Foundry Company, Portland, Maine. Nov. 30

Young man, about 19 years of age, to learn the wholesale and retail stove business; must be willing to work hard; no limit to advancement if ability is shown. "Learner," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Nov. 30

A first-class **PLUMBER, GAS, STEAM** and **HOT WATER FITTER**; one that is sober, honest and reliable; married man preferred. "C. K.," 2017 Adams street, Toledo, Ohio. Nov. 30

A bright, hustling salesman, fully experienced in the plumbing supply business; a fine opportunity for the right man. "B. G.," care *The Metal Worker*, New York. Nov. 30

First-class **SALESMAN** to travel and sell a large line of stoves, ranges and furnaces in the New England States; one who can sell goods may address, with references. "W. H. G.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

Good, steady, A1 **PLUMBERS**; will pay \$4 per day with nine hours; I want first-class men that understand their business and are rapid with their work; good men can have steady employment; must come at once. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Nov. 16

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of a large stove plant; state experience, reference, age, &c. "Trade-Mark," care *The Metal Worker*, New York. Nov. 23

A first-class **TINSMITH**; one who has worked on country houses. F. K. Walsh, Woodmere, L. I., N. Y. Nov. 30

Tin and sheet iron worker to act as **FOREMAN** of a large shop in Boston; one thoroughly competent may apply with references to "C.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 30

An all around man for job shop; one who can do plumbing, steam, water and furnace heating, pump and stove repairing; must be steady and reliable. Box 23, Aurora, N. Y. Nov. 30

A **TINNER** and **SHEET IRON WORKER**; good references as to honesty, character, industry and ability required; steady place for right man. Geo. H. Hornby, Valentine, Neb. Nov. 30

WOOD PATTERN MAKERS on stove and furnace work. "H.," care *The Metal Worker*, New York. Nov. 30

An experienced plumbers' brass goods **FOREMAN** or **SUPERINTENDENT** in an established Western factory; state experience, age, present occupation and salary expected; communications confidential. "Foreman," care *The Metal Worker*, New York. Nov. 30

Wanted, a **FURNACE SALESMAN** to go on the road; best of references required and a young man preferred. "H. N. S.," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Nov. 30

A good all around **TINNER** with knowledge of plumbing, gas fitting, &c.; must be strictly sober; state age and experience; state wages; steady work the year round for the right man. F. E. Kolter, Wapakoneta, Ohio. Nov. 30

We want a competent man to superintend making of sheet metal goods; must understand machinery for making these goods and be a competent, practical man; good position to right party. "Sheet Metal," care *The Metal Worker*, Hamilton Building, Pittsburgh, Pa. Nov. 30

SITUATIONS WANTED.

A thoroughly competent **TIN** and **SHEET IRON WORKER** desires a position and is able to correctly estimate work; can cut paterus, understands plumbing and steam and hot water and hot air heating, and is able to figure from plans to correctly erect same, and able to handle help. Box 174, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

Competent **DOUBLE ENTRY BOOKKEEPER** desires position; seven years' experience plumbing and stove business; would be willing to travel; A1 references from last employers. Paul Burgess, 700 North Fulton avenue, Baltimore, Md. Dec. 7

By a first-class **PLUMBER** with a good knowledge of tinning; would be willing to fill in time at the bench or take charge of shop doing a general plumbing, tinning and heating business; prefer Colorado, New Mexico or Arizona; state wages. "Western Plumber," care *The Metal Worker*, New York. Dec. 7

STOVE SALESMAN; man of large stove and furnace experience on the road and with extended trade acquaintance in Pennsylvania, New York and other Eastern States, wishes to contract for 1902; best references. "L. H. P.," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Dec. 7

By **SALESMAN** in heating line, furnaces or boilers; change desired January 1. "A. B.," care *The Metal Worker*, New York. Dec. 7

An experienced **STOVE SALESMAN** wishes to engage with some large wholesale or retail stove dealers; ten years' experience in the stove business; best references. Box 631, Windber, Pa. Dec. 7

By **TINSMITH**; also first-class fountain maker, doing all kinds of blowplp work; steady position, city or country. "Tinsmith," care *The Metal Worker*, New York. Dec. 7

TRAVELING SALESMAN, well known, desires to change; long experience through Pennsylvania, New Jersey and Delaware, also Central States; familiar with all kinds of cooking and heating apparatus. Geo. W. Harrison, Station W, West Philadelphia, Pa. Dec. 7

A first-class, practical **DESIGNER** wishes to change his position; expert in designing ornament; proficient in all the styles; is a capable wood carver and for the past five years has been the designer for a large pattern shop making a specialty of high-class stove patterns; has good business training and executive ability; details perspective water color sketches and details; can submit samples and photos; possesses highest references and is willing to invest some capital in a good proposition. "Steel," care *The Metal Worker*, New York. Dec. 7

Young man, age 20, experienced in tinsmithing and metal work, would like a position of any kind in the metal line; wages \$7. Paul Lascher, 126 Boerum street, Brooklyn, N. Y. Dec. 7

TINNER of 11 years' experience, who can do slating and stove work, desires contract for next year; strictly sober, industrious and can come at once. G. M. Hooper, Springfield, Tenn. Dec. 7

As tinner, plumber and gas fitter to take charge of shop as **FOREMAN**; 35 years in business for myself; Southern States preferred. "B. F. R.," 1923 East Franklin street, Richmond, Va. Dec. 7

By **PLUMBER, TINNER** and **GAS FITTER**, at once; 15 years' experience; Southern States preferred. "Plumber," 2718 N street, Richmond, Va. Dec. 7

(Continued on page 58.)

(Continued from page 57.)

SITUATIONS WANTED.

By a TIN and SHEET IRON WORKER; understands furnace work and general jobbing in tin and sheet iron. "J. N.," 98 Champlain street, Rochester, N. Y. Dec. 7

By a practical STOVE PATTERN CARVER and DESIGNER of experience, well posted in all pertaining to the latest styles in stove ornamentation and designing; steady position. "Carver," care *The Metal Worker*, New York. Dec. 7

As TRAVELING SALESMAN by a young man who has had eight years' experience in retail hardware and metal business; desires position with a good wholesale hardware house; can furnish the best of references, &c. Box 179, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

A practical PLUMBER desires position in city, Brooklyn preferred. P. O. Box 107, Babylon, L. I., N. Y. Dec. 7

For 1902, by a STOVE SALESMAN, with a house making a full line of stoves, ranges and furnaces; territory, Ohio, Michigan and Western Pennsylvania; reference from present house. "C. W. R.," care *The Metal Worker*, 312 The Cuyahoga, Cleveland, Ohio. Dec. 7

A CORNICE MAKER who is a capable pattern cutter; also a first-class roofer; 15 years' experience; New York or vicinity preferred. "Cornice," care *The Metal Worker*, New York. Dec. 7

As TRAVELING SALESMAN; by a young man who has had 15 years' experience in retail stove and tinware business; desires position with a good wholesale stove, sheet metal or tinware house; can furnish very best of references. Box 126, Fort Wayne, Ind. Dec. 7

As PLUMBER and GAS FITTER, by a young man; five years' experience in general jobbing; 25 years of age; temperate and reliable; single; can go any place, South preferred. "P. R. F., plumber," Lock Box 3, South Jamesport, L. I., N. Y. Dec. 7

A practical man, having had over 20 years' experience, wishes a position as SUPERINTENDENT or FOREMAN in a stove foundry; can manage a foundry economically and turn out first-class work; thoroughly informed as to all details entering in the cost necessary to produce first-class stoves and ranges. "C. G.," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Dec. 7

PLUMBER: 14 years' experience in all branches; good, quick lead worker; A1 on all sanitary matters; strictly sober, willing; best of references; two years with present employer. "Plumber," care Smolow, 421 West Thirty-second street, New York. Dec. 7

A man of good business ability and an expert heating engineer, can show highest efficiency in each, stands well socially and is well acquainted in the trade, is open for engagement for 1902 as manager for manufacturers' sales department or other position where qualifications and character are essentials. "Permanent," care *The Metal Worker*, New York. Dec. 7

Young man, 25 years of age, temperate and reliable, five years' experience in PLUMBING, GAS FITTING and GENERAL JOB-BING, is open for engagement; unencumbered, can go any place; unquestionable references as to character and ability; correspondence solicited. "F. R. P., plumber," Lock Box 3, South Jamesport, L. I., N. Y. Dec. 7

By a strictly sober and reliable TIN, SHEET IRON and COPPER WORKER, able also to do ordinary cornice and skylight work; would like steady situation, city or country; can approach customers; good on furnace work. G. Wiederman, 1109 First avenue, New York. Dec. 7

By a young man in the sheet iron manufacturing line as BUYER or ASSISTANT; has had office and factory experience and is familiar with cost and estimate work on special sheet iron goods. "Iron," care *The Metal Worker*, New York. Dec. 7

By an expert stove pattern maker, competent to design and carve; would like to correspond with a stove works in order to take full charge of the pattern shop; capable of getting up up to date original stove patterns. "F. C. Competent," 426 Fourth avenue, N. E., Troy, N. Y. Nov. 30

By a first-class WOOD STOVE PATTERN MAKER of years' experience. "Pattern," care *The Metal Worker*, New York. Nov. 30

By a New York licensed PLUMBER, to take charge of jobbing shop; A1 references. "A. E. J.," 953 Second avenue, Brooklyn, N. Y. Nov. 30

To represent manufacturers as their agents on the Pacific coast, strictly on commission, the following lines: Steel ranges, up to date air tight heaters, steel and cast hollow ware, stove pipe, elbows, dampers, rods, bolts, urns or kindred lines. What have you got? "S. A. M.," 748 First street, Portland, Ore. Nov. 23

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more efficient than any other Steam or Hot Water Heater known; ready to apply for patent and will assign part of right.

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"ESTABLISHED FIRM,"
Care *The Metal Worker*, New York.

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with not less than \$10,000 capital to invest in Steam Boiler and Hot Air Furnace Business.

Address "Y. Z. X.,"
Care *The Metal Worker*, New York.

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One Eddy dynamo with exciter 800 ampere, 3½ volts, with one extra armature. All in first-class condition, having been used very carefully. Offered for sale because a larger had to be substituted. Will be sold at a bargain. Address

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Tin Shop and small stock of Stoves and Dairy goods. Established 14 years.

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Complete, a first-class old established stove foundry, (capacity 75 moulding floors) including good will, fixtures, patterns etc., the best trade as customers. Real estate may be purchased or leased. For full particulars address

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Some one to manufacture a Patented Cash Register on small royalty with privilege of buying outright if desired. It is so simple that it can be made without power if necessary. A good opportunity for some one to make some money.

B. P. WAGNER, Sidney, O.

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Five sizes, for prompt shipment. Prices will interest you.

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Model outfit for stamping metal ceilings, numerous classical designs in sheets, panels and mouldings. Established for nine years in the city of New York. A good chance for party in one of the larger cities where no such manufacturing is in existence. For full particulars address "CEILING WORKS," 144 West 39th St., New York, N. Y.

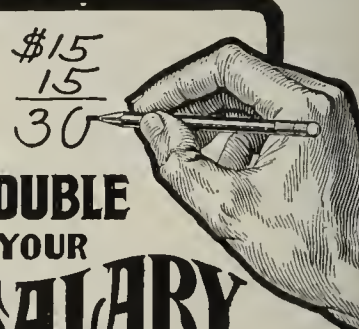
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A Double Crank Press, back geared, with positive stripping device and arranged especially for operating large perforating and blank dies: 45 in. between uprights; weight 13,000 pounds. Built by Rudolph & Krummel, Chicago. Machine is perfectly new, never having been used. Full description furnished upon application.

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Well established hardware, tin and stove business, together with a well paying tinshop, with or without property. Is one of the best locations for an enterprising man to make money. Possession Jan. 1st or later. CHARLES CAMMERER, Dayton, Ohio.



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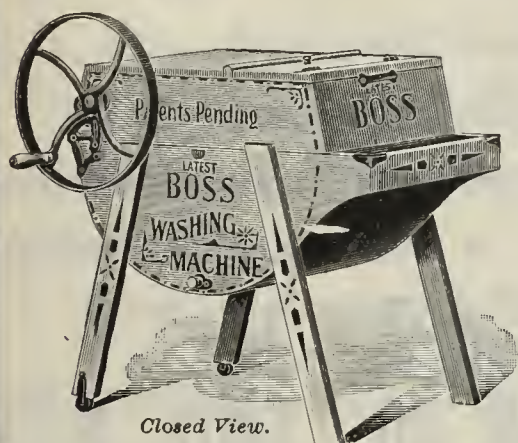
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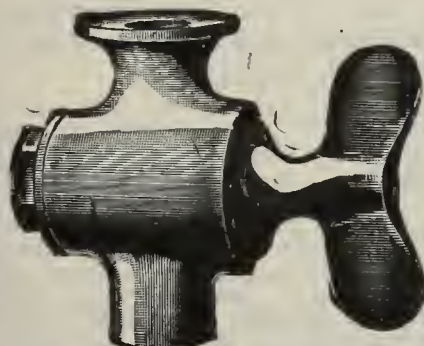
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10, 11, 12, steel frame lower cylinder.

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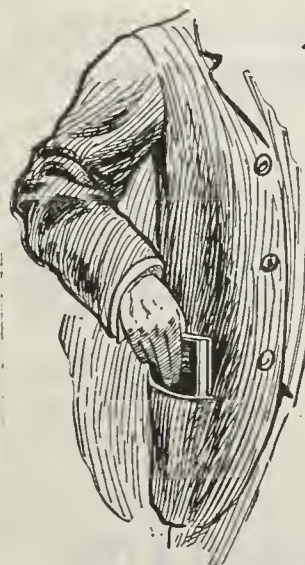
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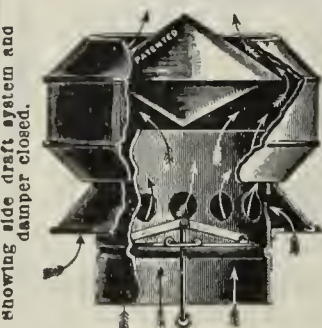
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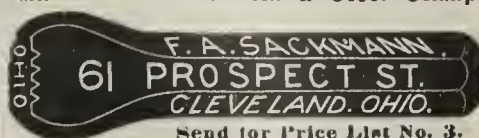
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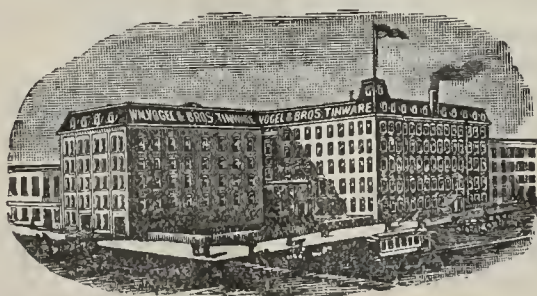
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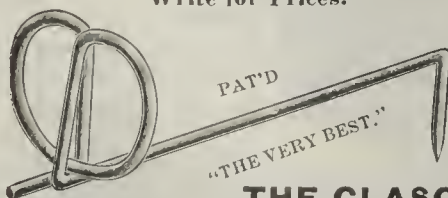
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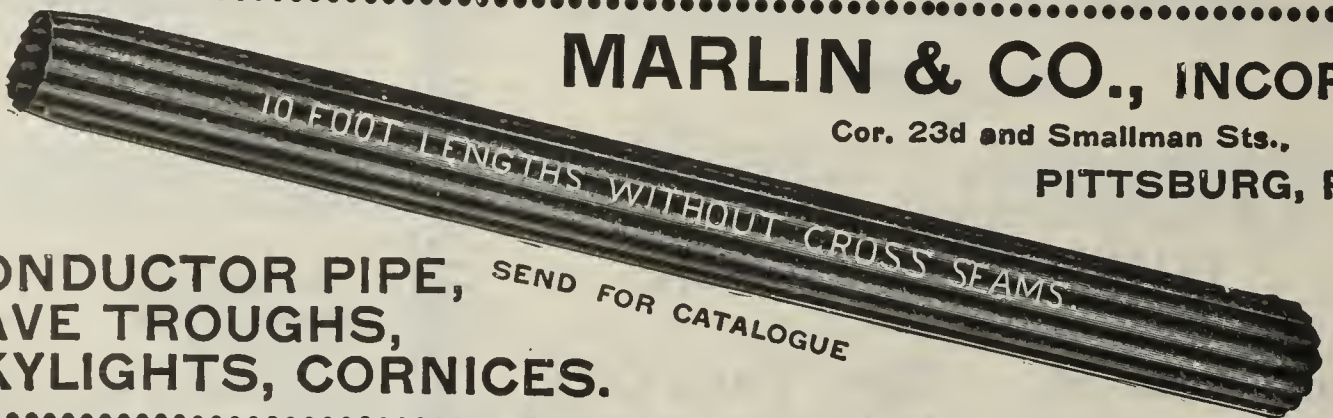
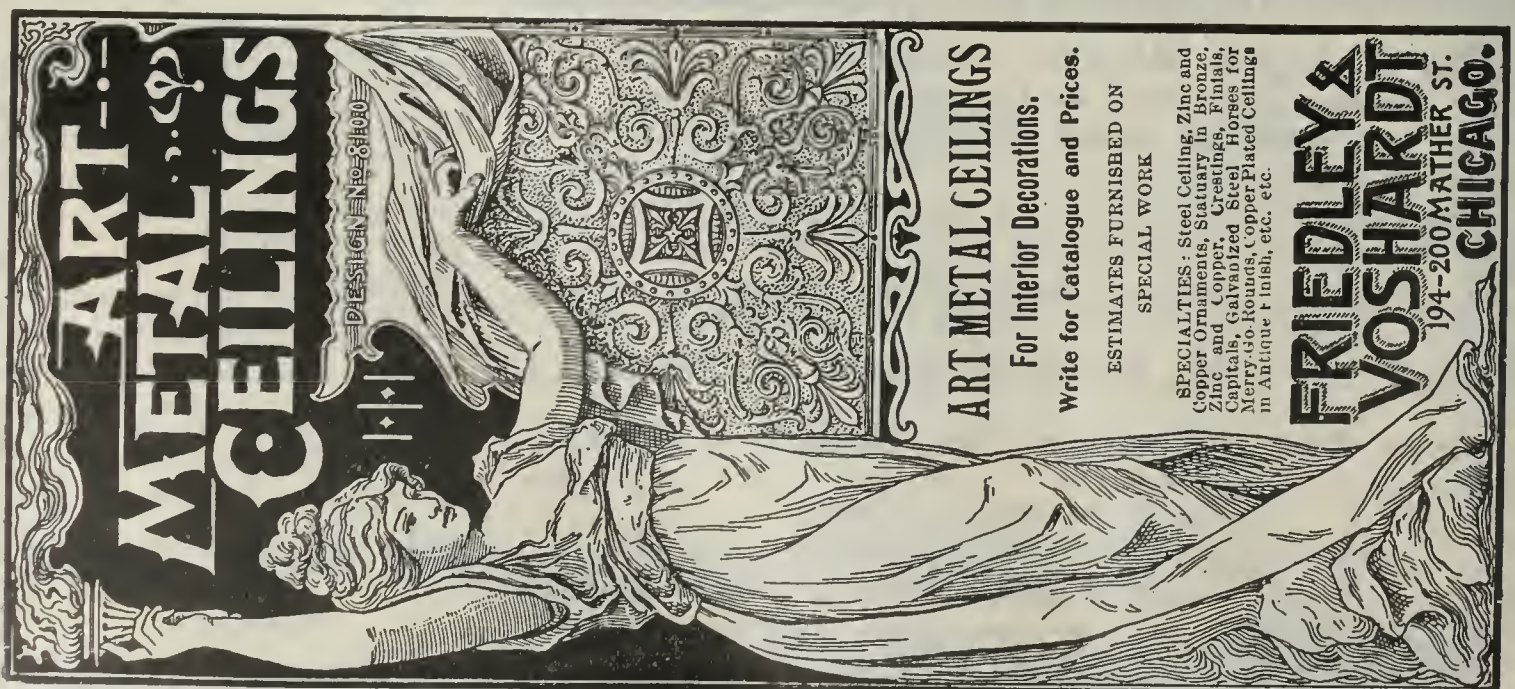
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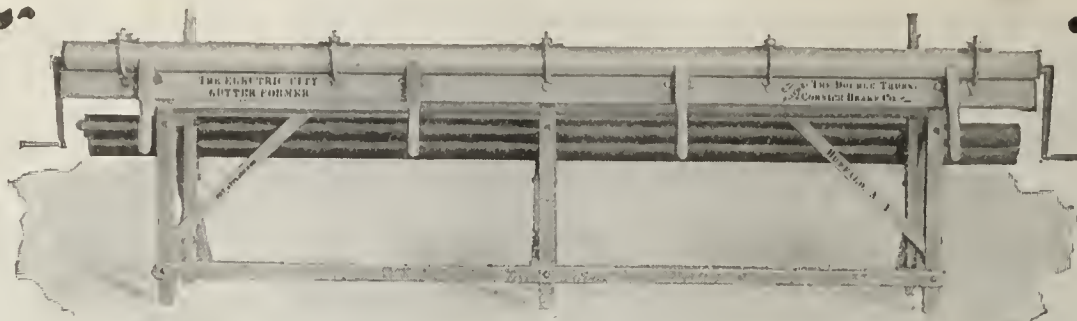
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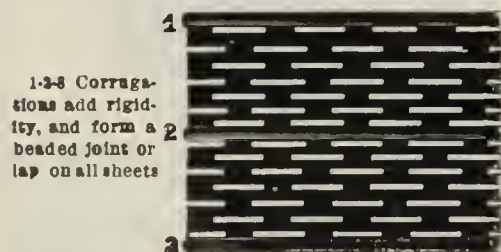
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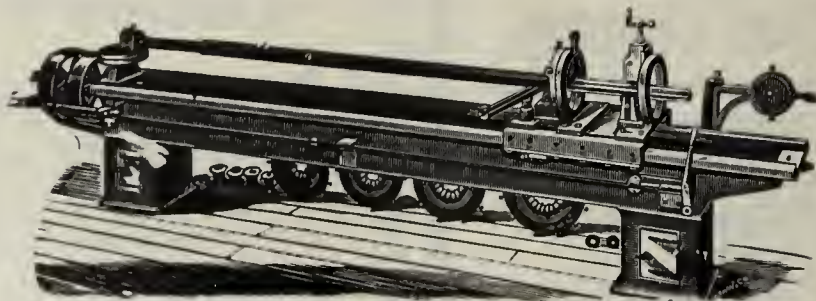
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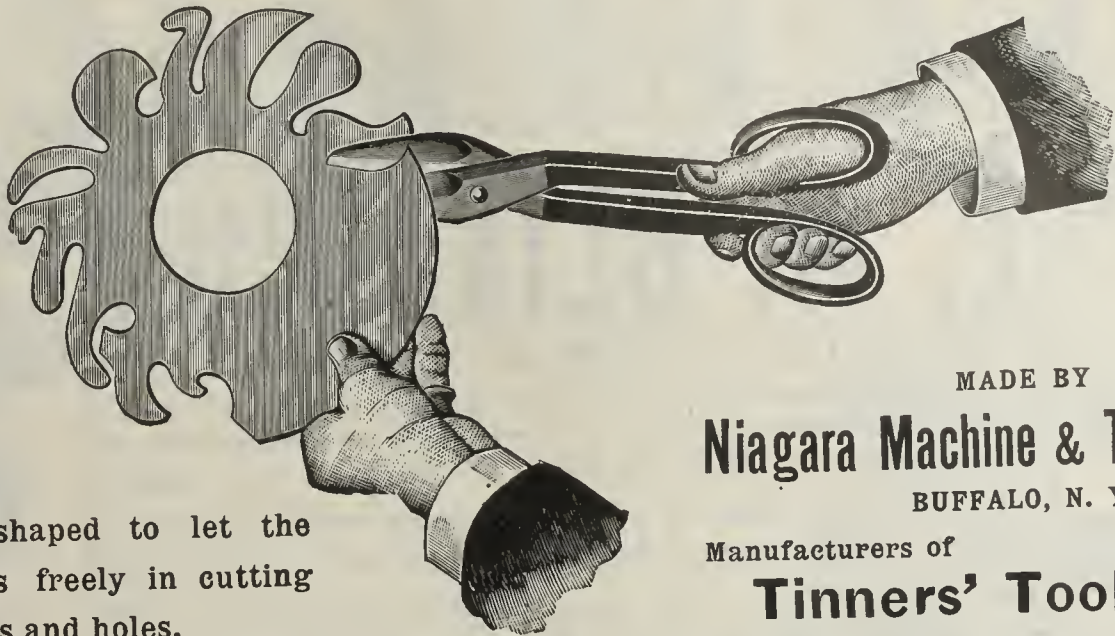
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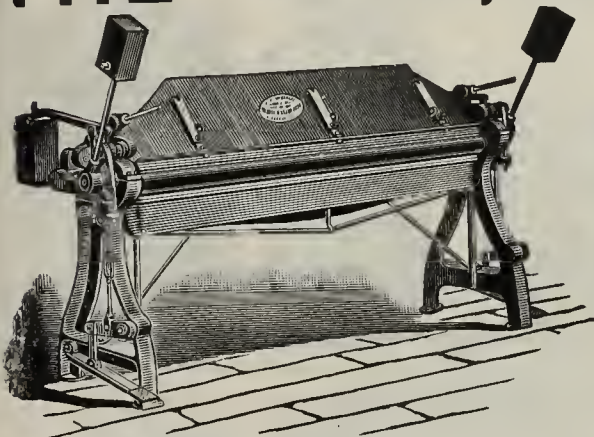
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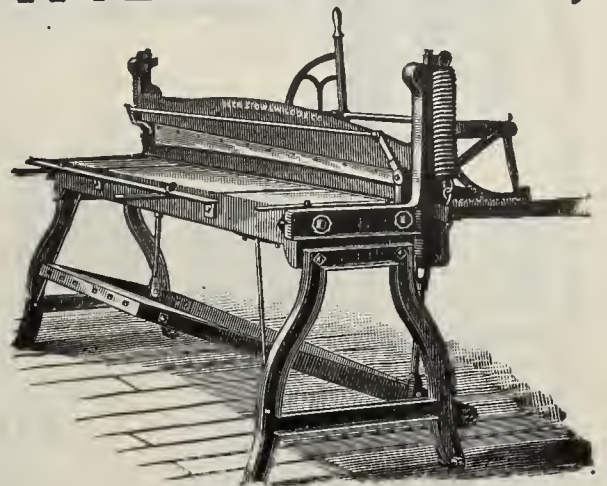
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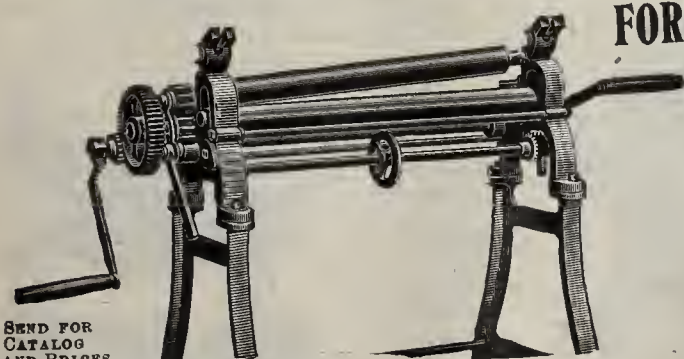
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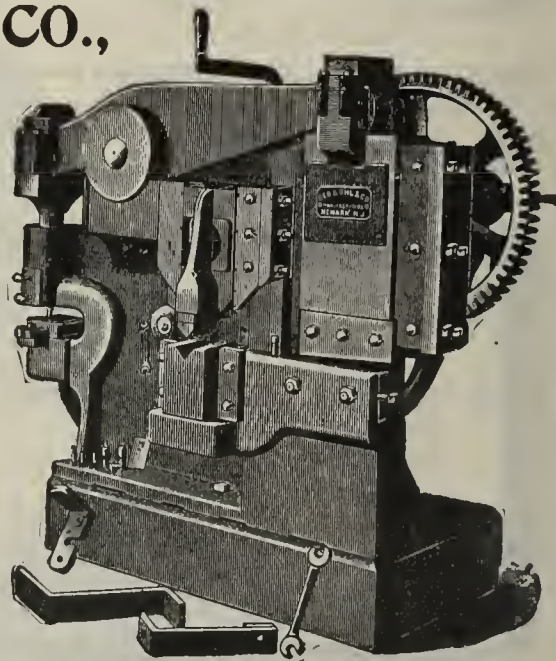
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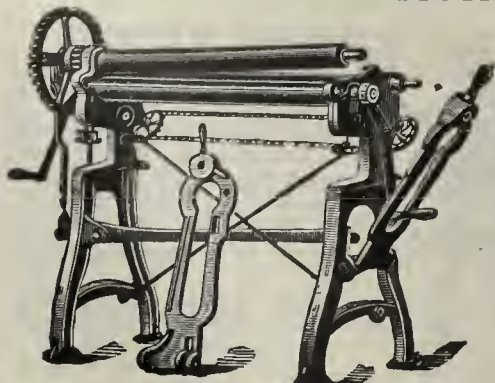
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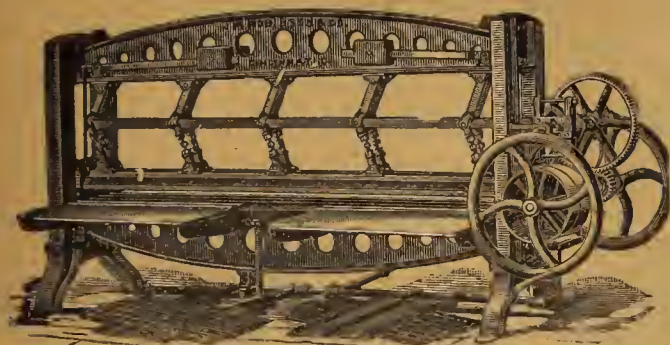
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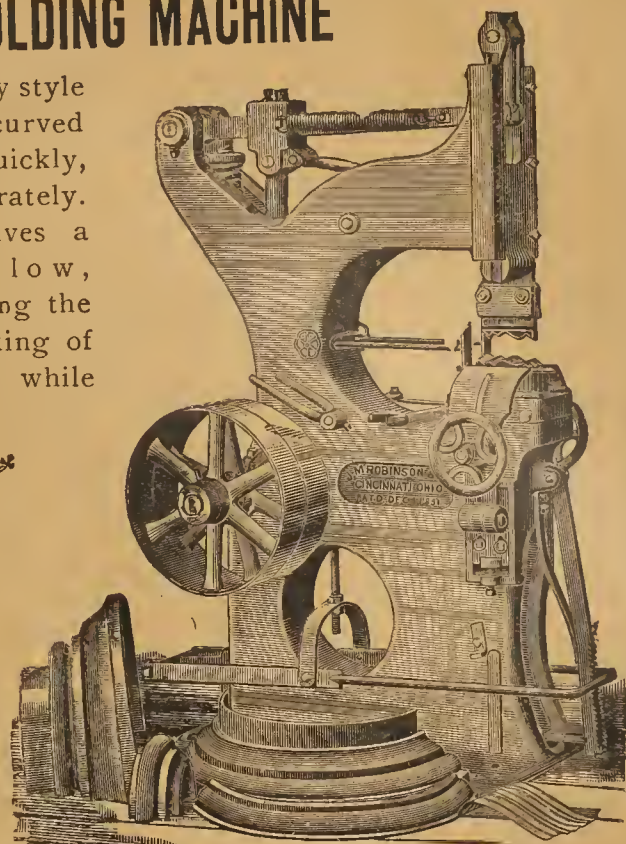


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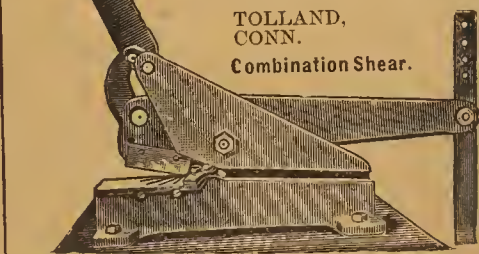
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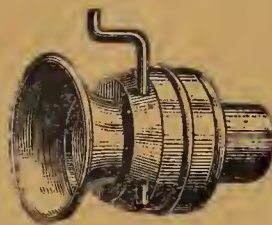
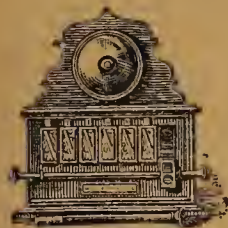
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Page 6.

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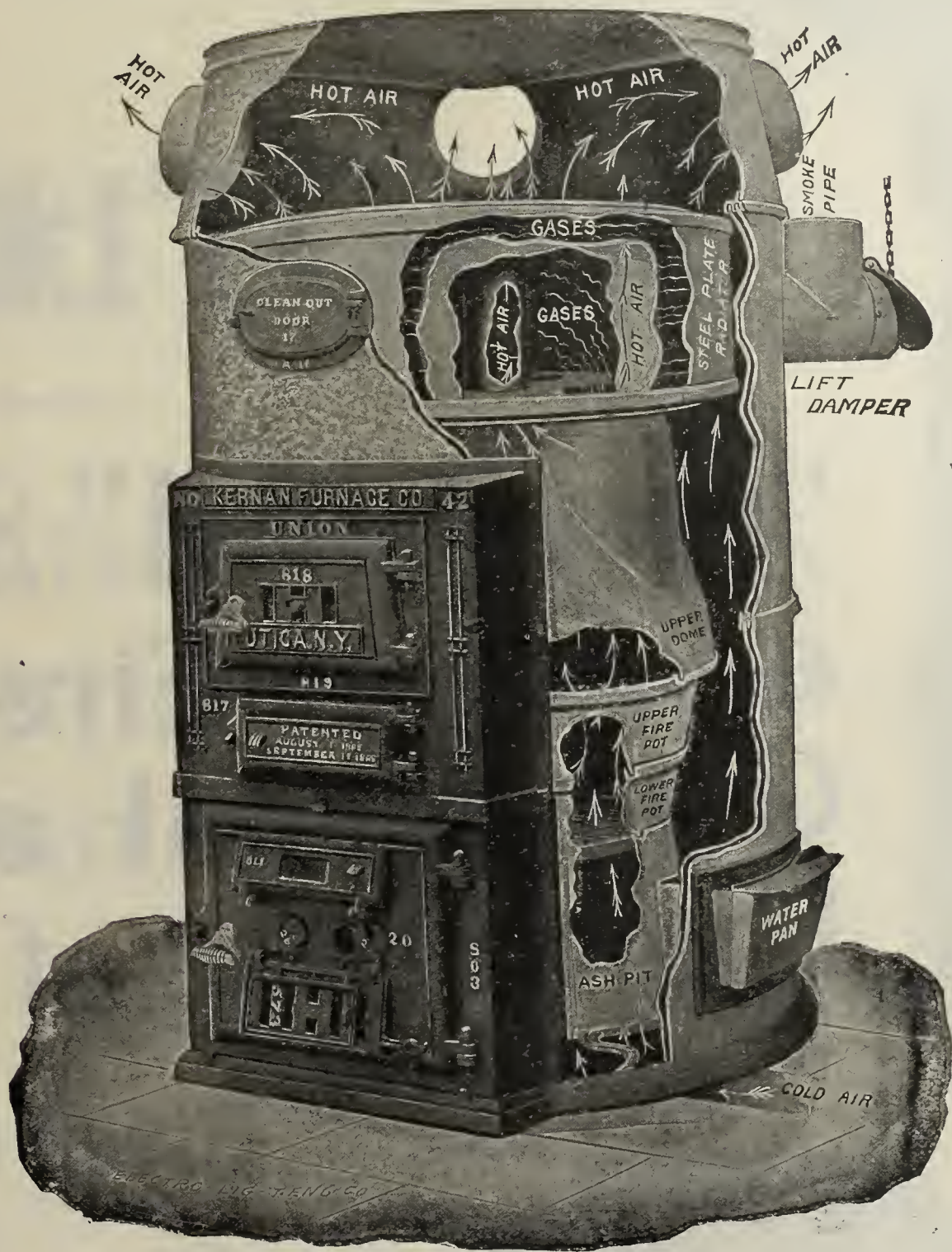
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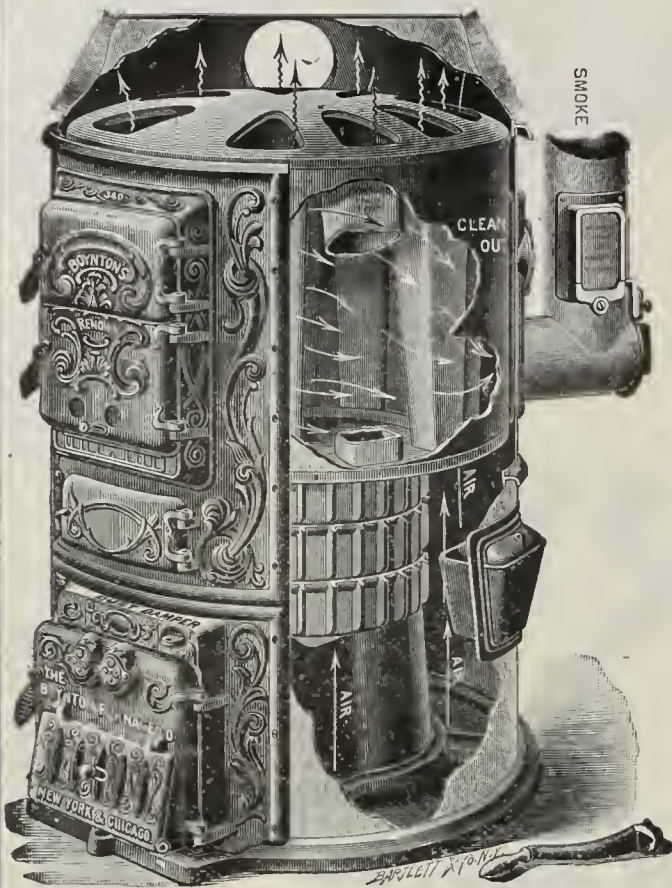
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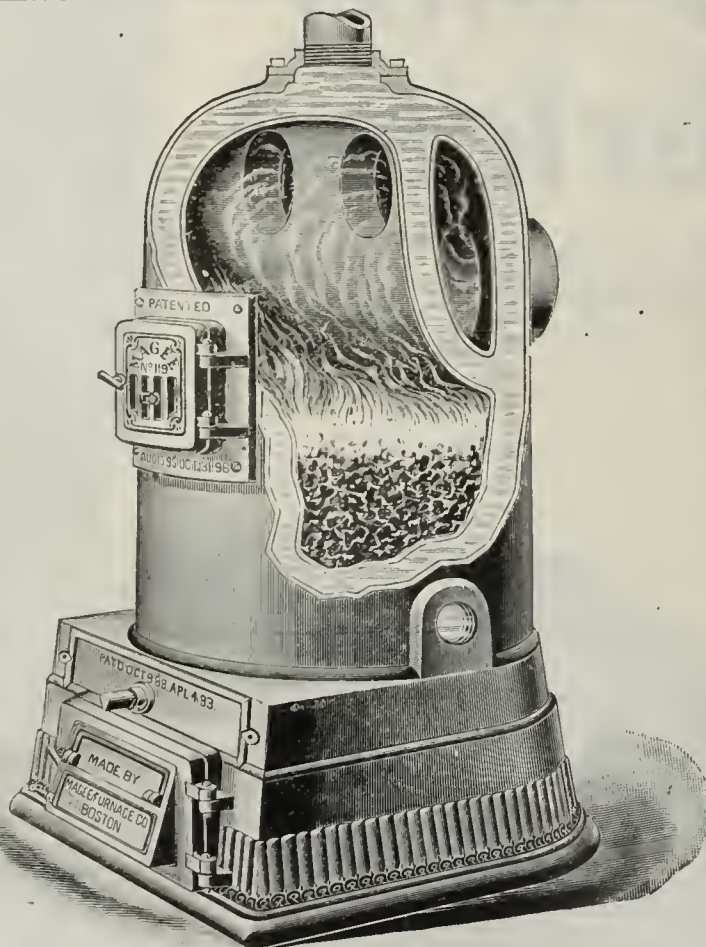
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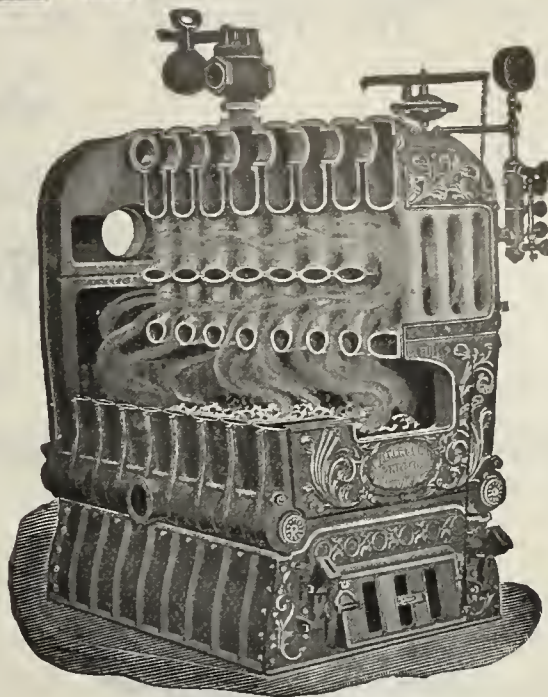
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31-35 Union St., BOSTON, MASS.



Makers Also of
CRAWFORD
RANGES.

Finest Factory in this Line in the World.

READ OUR OFFERINGS.

Special Advantages Over All Other
Heaters.



OUR HEATERS are only 4 ft. 3 in. high, giving excellent elevation for Hot Air Pipes.

OUR HEATERS ARE ALL CAST IRON, no repairing of sheet iron drums necessary every few years.

OUR MANIFOLD TUBES are steel, $\frac{1}{8}$ inch thick, and will wear for a lifetime.

OUR HEATERS are supplied with the most modern grates, perfect dumping and shaking. Each bar can be separately replaced.

OUR HEATERS are so arranged that they can be perfectly cleaned by any one, and in a few moments.

Equally Efficient with Hard or Soft Coal.

Our Heaters save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE, REFERENCES AND FULL PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

MANUFACTURERS of the FORBES WARM AIR FURNACE.

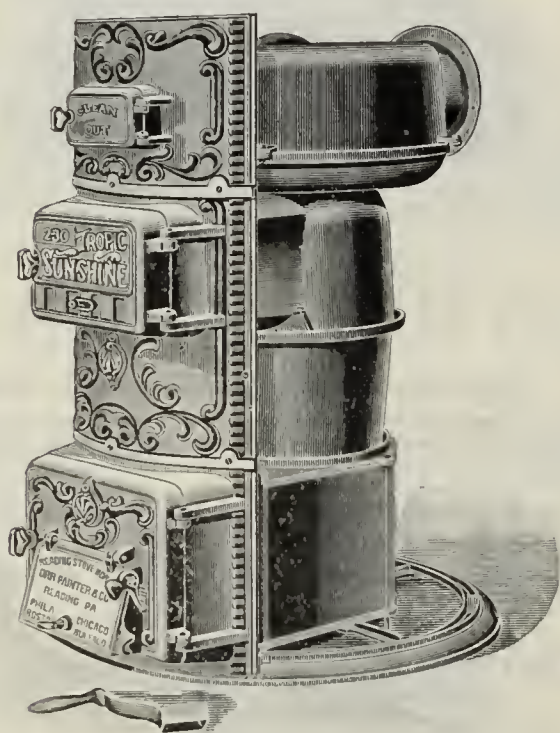
232 Quarry St.,

PHILADELPHIA, PA.

Sunshine Stove Shop

We recently mailed to all dealers a copy of
Healthful Heat,
 a booklet descriptive of our new furnace, the
Tropic Sunshine.

Sunshine goods are sold only through special agents
 having exclusive control. It will pay dealers to investi-
 gate the merits of this new furnace
 and secure the right to sell it.



The Tropic Sunshine is not
 just a furnace—it is a perfect
 furnace. Best of iron, clean
 castings, air tight and gas tight.
 It's worth looking up.

"Comfort in Cold Weather"
 describes other styles of furnaces. Send for it. Our
 line is complete.

Torrid Sunshine, Tropic Sunshine,
 Beacon Sunshine.

These together with our Steam and Hot-Water
 heaters enable us to supply heating apparatus suitable for
 every requirement.

The Reading Stove Works, Orr, Painter & Co.,
 Main office and shops, Reading, Pa.

Ideal Boilers.



Ideal Invincible Water Boiler.

IF WE HAVE NOT

had the pleasure of doing business with you, we feel it is because you have not given our Ideal Boilers and American Radiators the calm consideration to which they are entitled in view of the tremendous efforts we have put forth to place them distinctively in advance of any other goods upon the market. May we not send you our latest catalogues and prices?

American Radiator Company

~ ~ ~ ~ ~

Send for our
1901 catalogue—
profusely illustrated.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver

1902

RELIABLE VAPOR STOVES

AND RANGES.



It is a source of gratification that we are again able to point to a number of improvements for the coming season, that not only signify our desire to keep abreast of the times, but our determination to keep the RELIABLE in the position it has so long enjoyed, that places it beyond competition.

Our trade-mark "RELIABLE" stands for all that is best in stoves the world over. If you wish to control the vapor stove business of your city, place a sample line of RELIABLE stoves on your floor. They will do the rest. This is the line that never disappoints.

Send for 1902 Vapor Stove Catalogue. It is yours for the asking.

THE SCHNEIDER & TRENKAMP CO.,
CLEVELAND, CHICAGO, SAN FRANCISCO.

MONARCH

LINE



New
Patterns

for
1902

And Say!

Maybe you think they're not beauties. Well, just "Have A Look" and you'll agree that they will eclipse anything in the line of Gasoline Stoves (both Evaporating and Generating Styles), Wickless Blue Flame Oil Stoves in both "Elevated Tank" and "Student Lamp Tank" Construction ever offered the trade that are made on strictly original and distinctive lines, and

DON'T FORGET IT

We make the World Famous Asbestos Lined Ovens, all of which will be pushed and represented to the trade with greater VIM than ever. We're in it to meet the demands of the trade and are going to do it to beat the band.

THE MONARCH STOVE & MFG. CO., Mansfield, O.

BRANCHES: { 284-5 Pearl St., N. Y.
107 N. 2d St., Phila.
203 Wood St., Pittsburg.

67 Lake St., Chicago.
191 Eagle St., St. Paul, Minn.

H. R. BRUCE & CO., Agents, 419 Pike Bldg., CINCINNATI, O.

JEWEL STOVES AND RANGES..



A Complete, Well Advertised Line:
Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES

CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES,
IND.

A Source of Comfort



during the cold blasts of winter can be found in a good furnace. Not only does the **user** enjoy it, but the **dealer** derives great satisfaction as well as profit from it.

Good Furnaces are to be found at reasonable prices if you look in the right place.

This advertisement is intended as a guide to point you to **the** right place. If you would be convinced try it and see.

Faultless Furnaces.

Hero do.

Comfort do.

Rival do.

The Graff Furnace Co.,

208 WATER ST., NEW YORK.

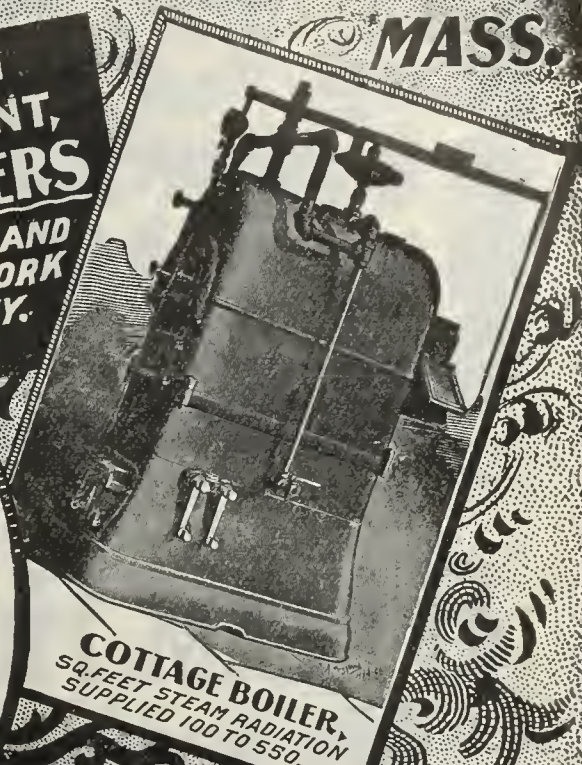
THE H.B. SMITH CO.

WESTFIELD,
MASS.

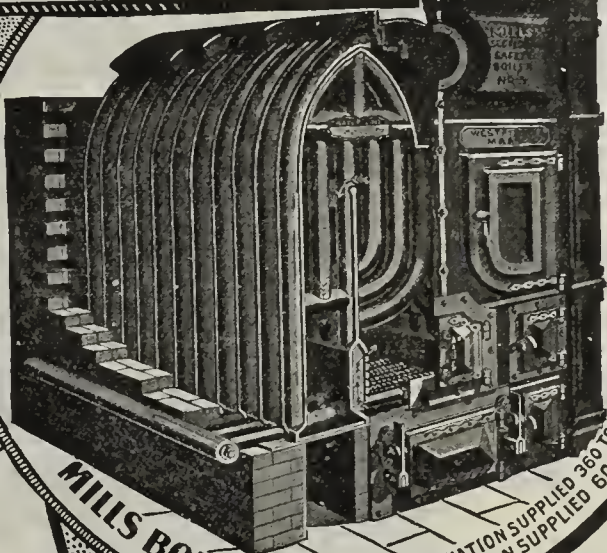
EUROPEAN
AGENT,
AUG. EGGERS
BREMEN AND
NEW YORK
CITY.



GOLD BOILER.
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.



COTTAGE BOILER.
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.



MILLS BOILER. SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.

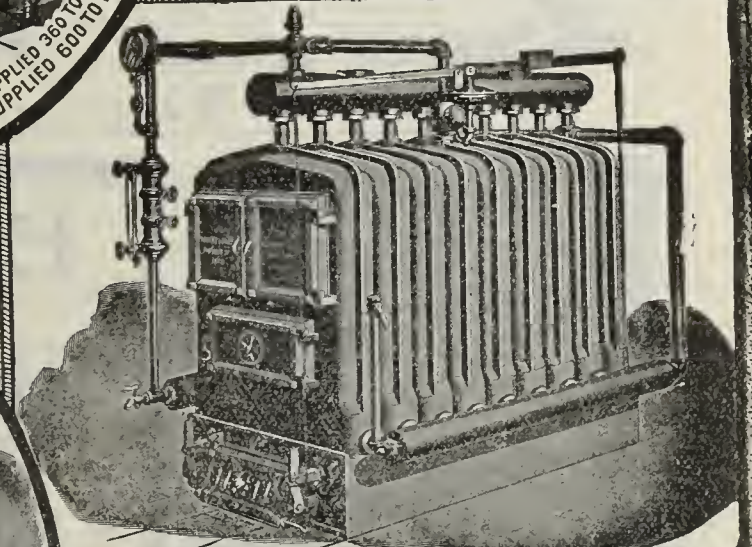
PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.



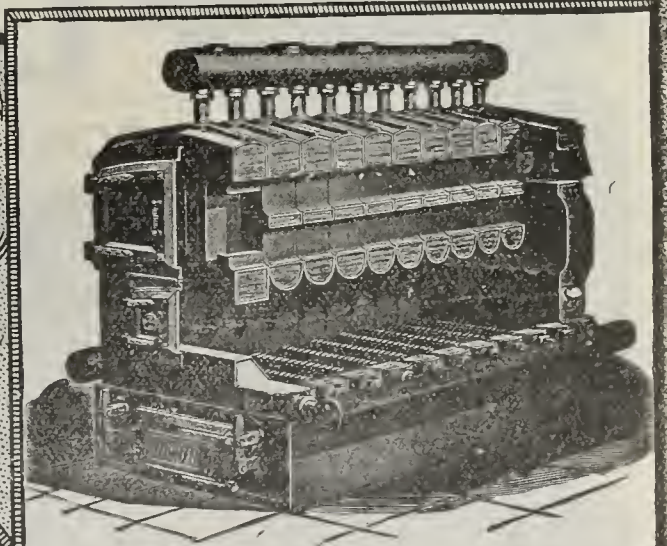
COTTAGE BOILER.
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENIO HEATER.
TANK CAPACITY
100 TO 180 GALLONS.



MERCER BOILER.
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



MERCER BOILER.
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

SALESROOMS:

133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.

Royal Heaters.

MANUFACTURED BY THE

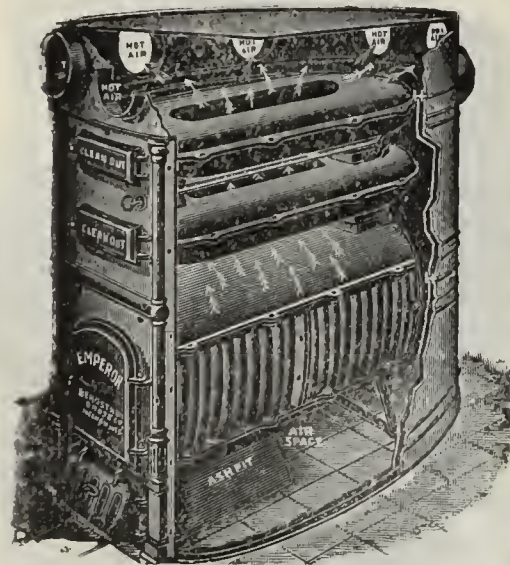
HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces,
 Furnished for either Brick or Galvanized Iron Casing

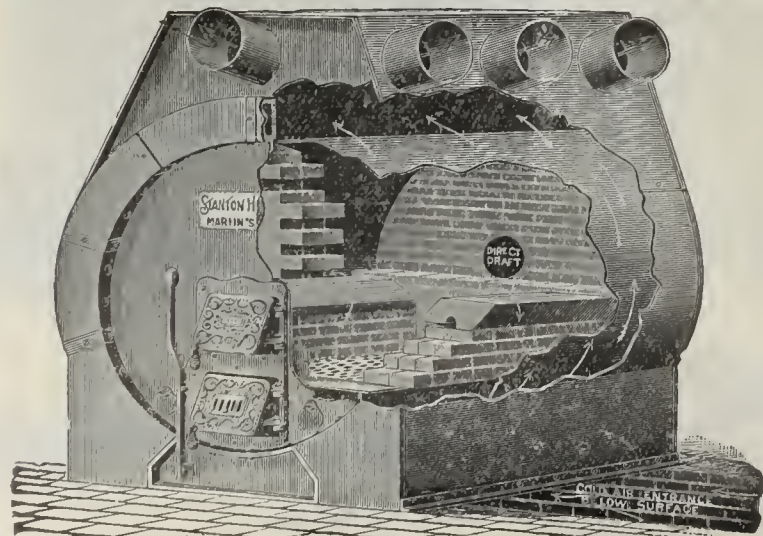
SEND FOR CATALOGUE.

Bergstrom Bros & Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly

ROBINSON-HUGHES & CO.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

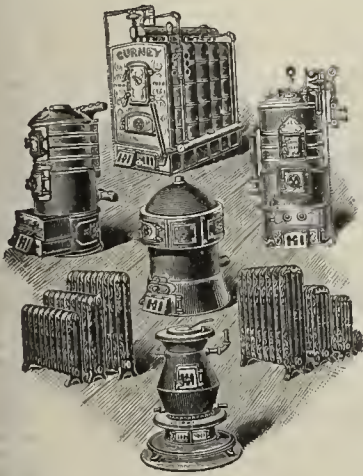
See our advertisement next week.

Even members of the same family are not always alike in virtue or ability, yet the

Gurney Heaters

Are of uniform excellence. In all of them the heating surfaces are so arranged as to produce a maximum of heat from a minimum amount of coal.

All are made from the best grades of iron, have the most efficient types of grates, and embody all the latest improvements. "Bright Idea," "Doric," and "400 Series" Steam and Hot Water Heaters are thus equipped. Sales of any of them will enhance your reputation. Would you become an agent? Let us hear from you.



GURNEY HEATER MFG. CO.,

74 Franklin Street, Boston.

111 Fifth Ave., New York City.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

Everybody Knows,

or ought to know, and we are prepared to furnish the necessary information if they do not know, that

THE BENGAL FURNACE

burns less coal and gives more heat for the same amount of fuel than any other furnace made.

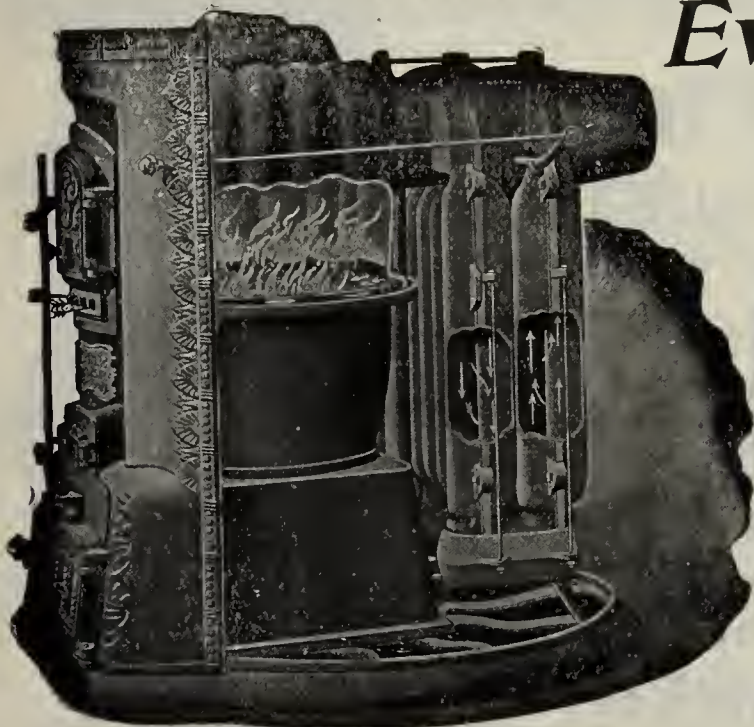
BOOKLET FOR THE ASKING.

MAKE NO MISTAKE.

Secure the agency for the BENGAL before it is too late.

FLOYD, WELLS & CO.,

ROYERSFORD, - - PA.



Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover and Elm Sts., BOSTON, MASS.

1000 REGULATORS SOLD IN EIGHT WEEKS.

THE WIRETON TIME REGULATOR.

*We want your business and are bound to have it if price, prompt delivery, and courteous treatment is any inducement to you.

The THREE requirements for a first-class furnace are ALL Incorporated in the

New Quaker Furnace.

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and ECONOMY in REPAIRS.

DROP US A POSTAL AND WE WILL TELL YOU ALL ABOUT IT.

Our furnaces and specialties are great levers for pushing business your way. Exclusive agencies given.

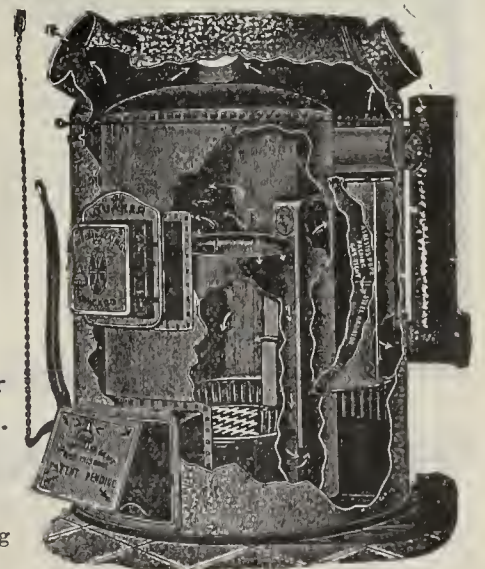
WIRETON HEATING CO.,

Main Office and Works, Blue Island, Ill. Chicago Office, 40 Dearborn St.



A Marvelous Seller.

Will automatically turn on the draft of any furnace, steam or hot water boiler



FOUR YEARS AGO in a town not over a hundred miles from Boston, a man had a No. 21 "DIGHTON" put into his house to heat Front Hall, Sitting Room, Dining Room on first floor and three chambers and Bath Room on second floor: he told a friend who completed a house in the Fall of 1900 that he believed the "DIGHTON" was the best and most economical Hot Air Furnace ever built and advised him to get one, as he burned only a few hundred pounds over five tons of coal and kept a coal fire from the first of November until the middle of the following May.

We had an opportunity to talk with the friend a few days ago and he reports equally as satisfactory and economical results and tells us of three of his neighbors who have recently had "DIGHTONS" installed by a local dealer.

In over thirty years' experience in making and selling all types of Furnaces, we never sold an equal number of any one kind and had as little complaint.

No Furnace Manufacturer can now or ever did give the real Furnace value that we do at the price we sell you the "DIGHTON."

You can't afford not to know about it.

A complete line of salable sizes at salable prices.

DIGHTON FURNACE CO., Taunton, Mass.

All Cast Iron Double Radiator.



Quality First
IS THE PRINCIPLE FOLLOWED

In the Manufacture of

MUELLER

Furnaces and Boilers.

Made in all Styles—For all Kinds of Fuel.

Get Our Special Register Offer.

EVERYTHING IN THE HEATING LINE.

FOR WOOD.



190 Reed St., L. J. MUELLER FURNACE CO., Milwaukee, Wis.

THE
HAXTON
DEFENDER

GREAT NORTHERN

THE SUPERIOR

TABASCO

DON'T

look any further if in search of boilers for steam heat or hot water. The list opposite contains the standards. Send for catalog and get acquainted with them.

KEWANEE BOILER COMPANY
KEWANEE, ILLINOIS.

GILT EDGE FURNACES AND COMBINATION HEATERS.

Registers, and Tin and Galvanized Iron Furnace Fittings.

MANUFACTURED BY

R. J. SCHWAB & SONS CO., = Milwaukee, Wis.

They regulate
heat in residences,
offices, stores,
mfg. plants.
Guaranteed.

...Wanted...

Mechanics familiar with the installation of house heating furnaces
or boilers to sell and put up

No electricity
or compressed air.
Simple as
a heavy spring
motor can be.

SPRAGUE *AUTOMATIC* DAMPER and VALVE REGULATORS

Must be of good address and have ability as salesmen. Salary
\$15 per week and expenses. References required.

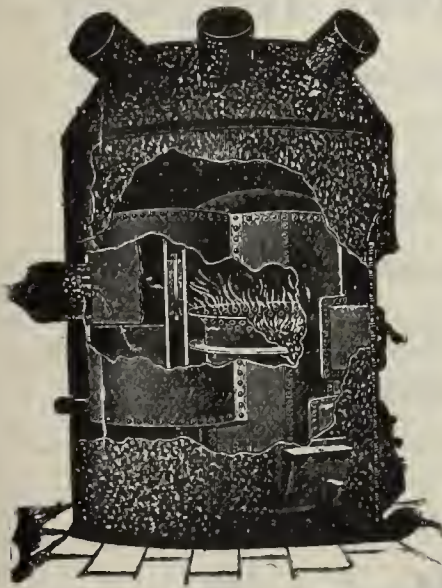
WRITE THE MANUFRS.,

HOWARD THERMOSTAT CO., Oswego, N.Y.

WEST WATER STREET

They Are
"Coal Savers."

Money Makers
for Dealers.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but
a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

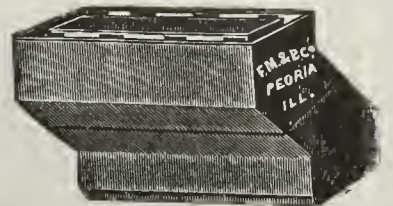
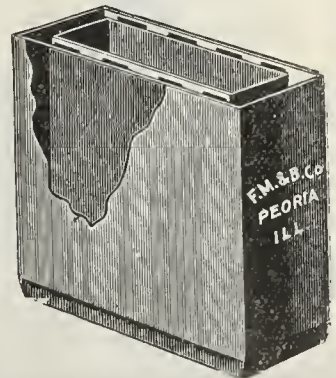
The saving of labor in putting it up really makes it the
cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



About Fire Pots.

We formerly lined our fire pots with cast iron—
then they cracked and warped. Now we use fire
brick for lining and will guarantee it for five years.
The lining is replaced through the fire door.

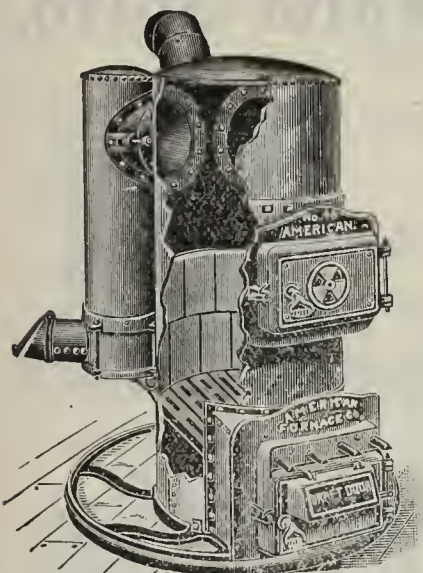
The AMERICAN FURNACE is made strong in
places where other furnaces have proven weak; it is
made of heavy steel and riveted tight like a boiler.
Will burn any kind of fuel.

You can only build up a permanent furnace busi-
ness by handling a first-class furnace. We manu-
facture for the better class of trade.

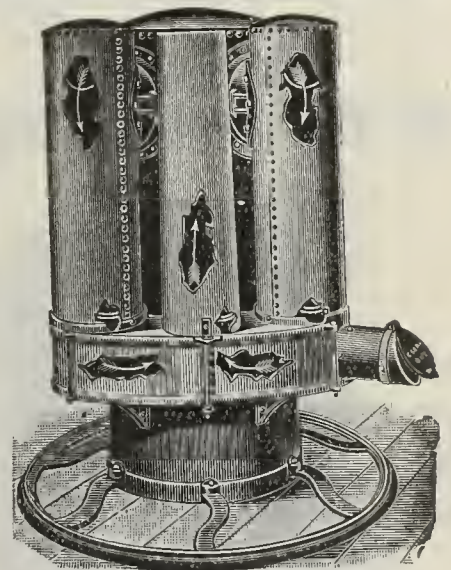
The American Furnace Co.,

1911-13 PINE STREET,

ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY
WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

**HOT WATER
AND
HOT AIR**



HEATING BY COMBINATION STOVES
AND FURNACES.

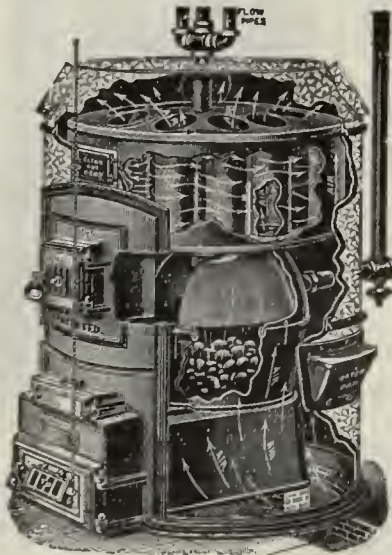
Suitable for Large or Small
Houses, Stores, Conserva-
tories, Barber Shops, Ho-
tels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

**THE NATIONAL
PIPE BENDING CO**
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

They
Fit
Any
Furnace.



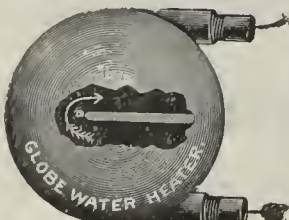
Showing one method of application.

These Boilers are made in three sizes diameter,
and from 100 to 600 square feet radiation capacity.
Will heat those cold rooms, or an addition to
the building. Will increase the capacity of any
furnace. Are cheaper than coils and will do
more work.

GLOBE

**WATER
HEATER**

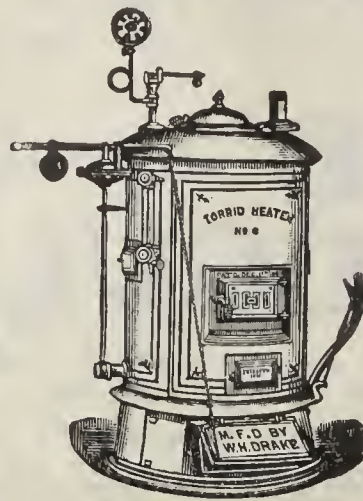
Attached to any
Furnace will
heat water for
domestic use.



Write for new circular. Manufactured by

FRANK D. STOLZ,
15 Lake St., - - - Chicago, Ill.

"TORRID HEATER."
FOR STEAM OR HOT WATER.



It is Practical in Design.

It is Safe, Being Tested to 200 Pounds.

It is Easy to Manage and Keep Clean.

It is Durable.

It is Sectional and Easily Handled.

It has No Packed Joints.

It is Self-Feed or Surface Burning.

*It has the Torrid Patent Rocking and
Dumping Grate.*

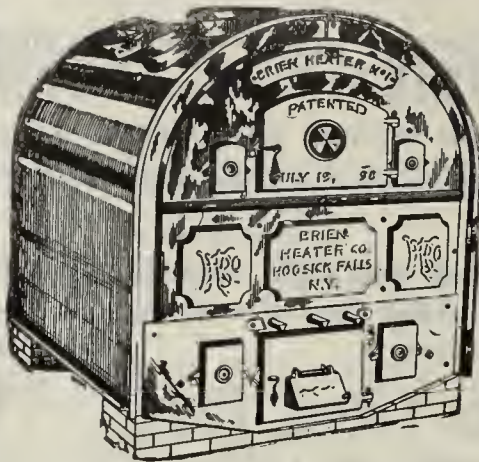
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St.,
NEWARK, N. J.

Factory: Hackettstown, N. J.



Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.



CLAD'S Hot Water Stove.

PRICE-LIST ON APPLICATION.

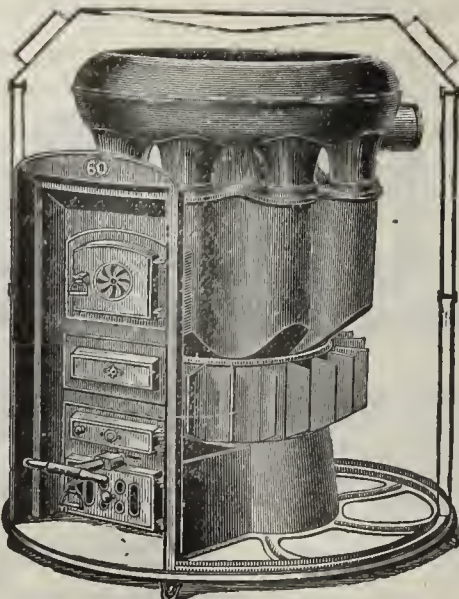
V. CLAD & SONS,

MANUFACTURERS OF

French Ranges and Broilers,

Twelfth Street below Locust,

PHILADELPHIA.



Imitation is Flattery.

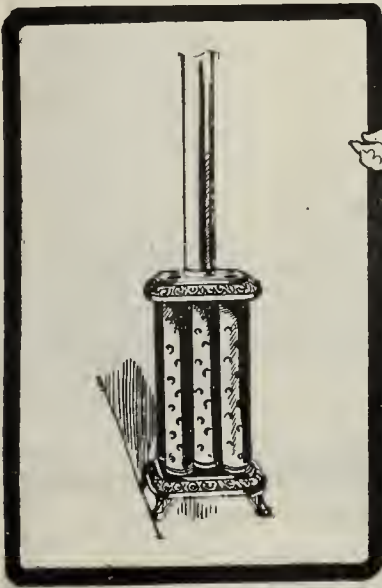
Cory's All Cast FURNACES

HAVE BEEN COPIED
BUT NEVER EXCELLED.

An Absolutely Gas Tight Furnace
Without Bolted Joints.

UZAL CORY & CO.,
210 WATER ST., NEW YORK.

Established 1847.



NEW ERA RADIATOR

HOT FACTS—of which this is No. 3.

Because heated air rises, it is not right to presume that most of it can be caught by cross tubes that intercept its course. To prove this, put your finger **ACROSS** the chimney of a lighted lamp. It burns—that's the horizontal tube. Then put your finger **DOWN** into the chimney, if you dare—that's our perpendicular tube.

This proves that to get most of the escaping heat, the tubes must be placed in the direction of the heat's course. That is why a New Era Radiator secures more heat than any other. You are selling the wrong radiator until you get hold of the New Era. Send for our inducements.

WILMOT CASTLE & CO., ROCHESTER, N.Y.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

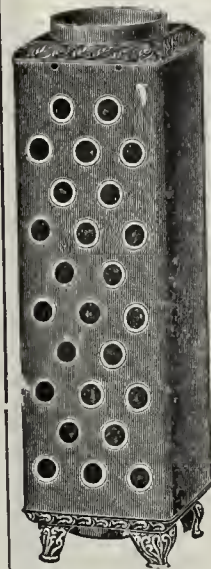
WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

Your Customer



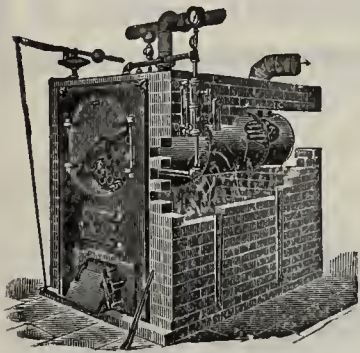
has a room to heat, but does not want to buy a stove.

A sure winner in such a case is an

**Independent
Square Stove
Pipe
Radiator.**

Set it up, connect to a stove pipe, leave it alone—that's all Let us post you.

INDEPENDENT REGISTER CO.,
152 Champlain St., Cleveland, Ohio.



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,

373 Atkinson St..

Geneva, N. Y.

CABINET

PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

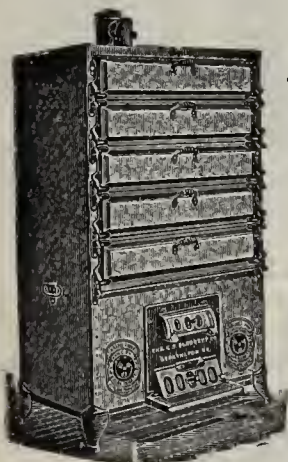
FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enamelling, etc.

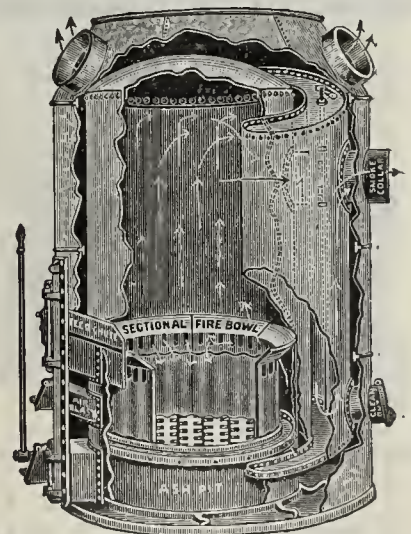
Made in six sizes, single and double, for coal, wood natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A



The LENNOX



Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

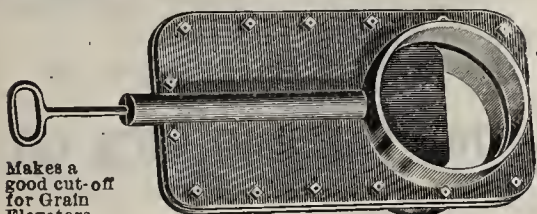
East Frederick St., Marshalltown, Iowa.

CATALOG FREE.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,
NEW HAVEN, CONN.



Makes a good cut-off for Grain Elevators.

MICA

Specialy Prepared for the Stove Trade.

OHIO MICA CO., CANTON, OHIO.



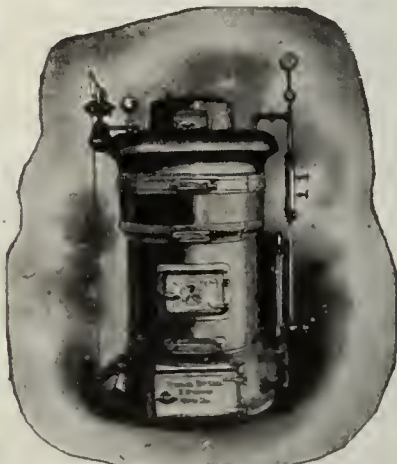
WINCHESTER HEATER.



How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

Pierce BOILERS and RADIATORS

for Steam and Water Heating.

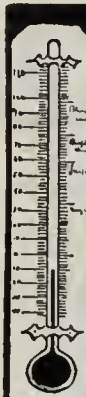


Pierce Touraine Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
and Heating Engineers.

Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
New York. Boston. Philadelphia.



TEN BELOW ZERO DOES NOT BOTHER THE

RICHMOND HEATER.

IT IS EFFECTIVE IN ALL KINDS OF WEATHER.
POWERFUL, ECONOMICAL, EASY TO REGU-
LATE, DURABLE.

Write for Catalogue.

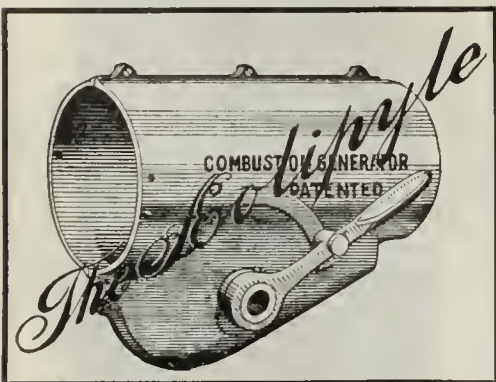
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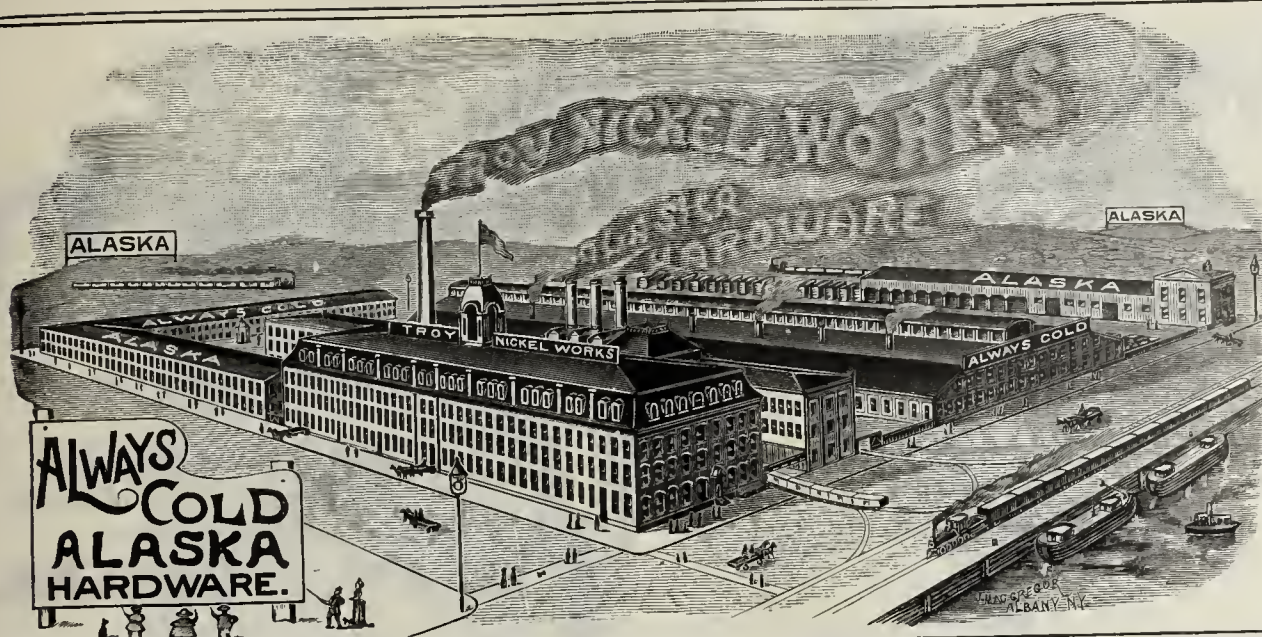
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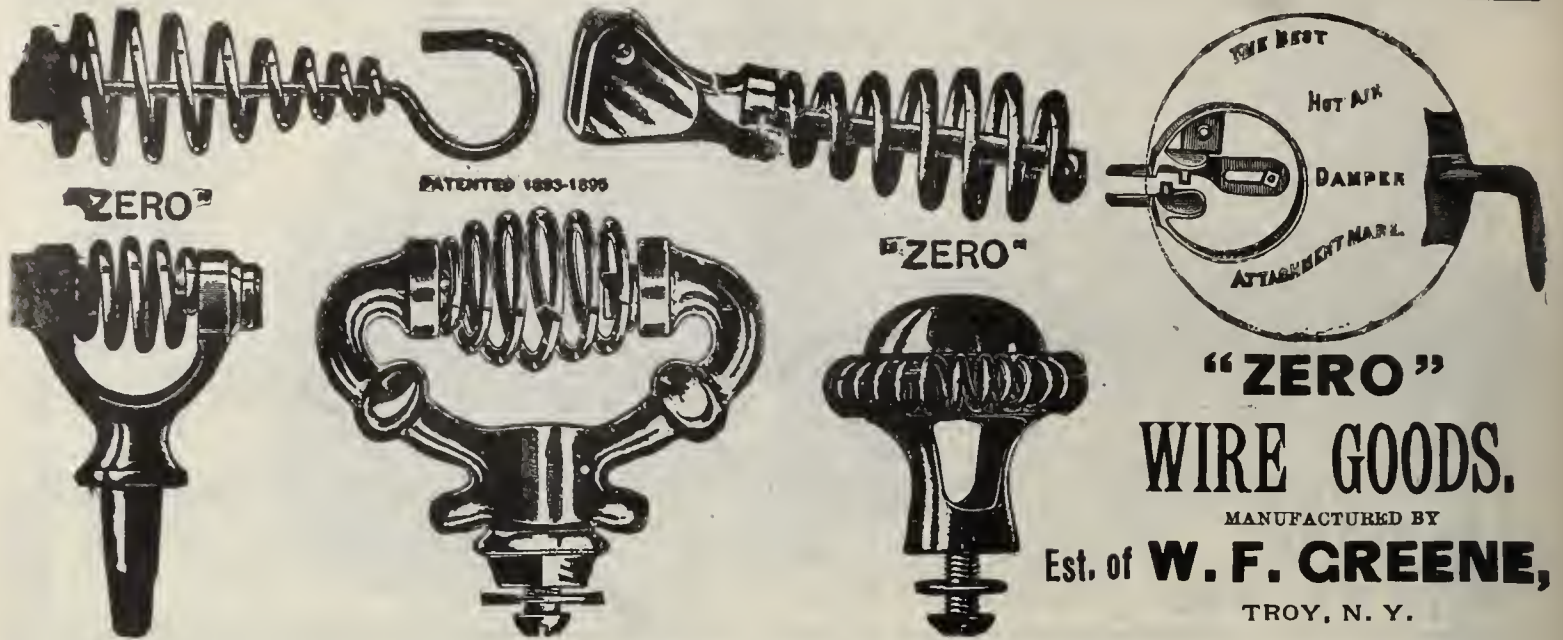
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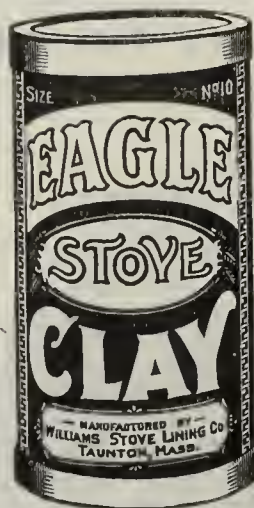
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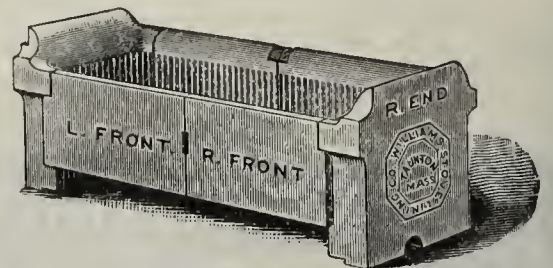
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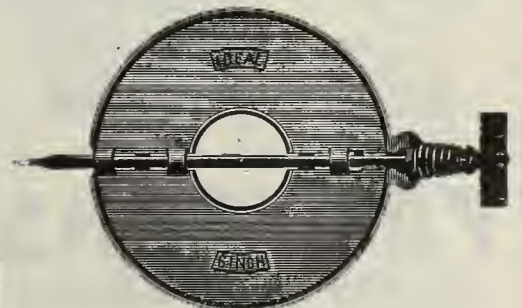
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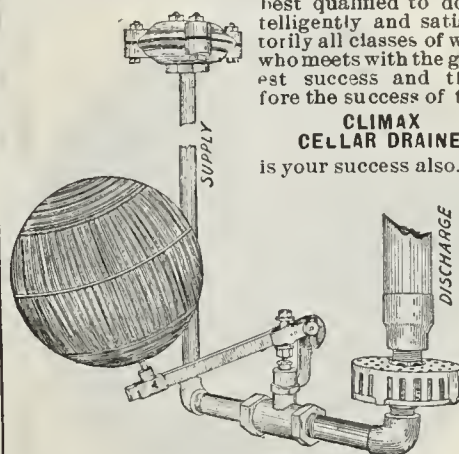
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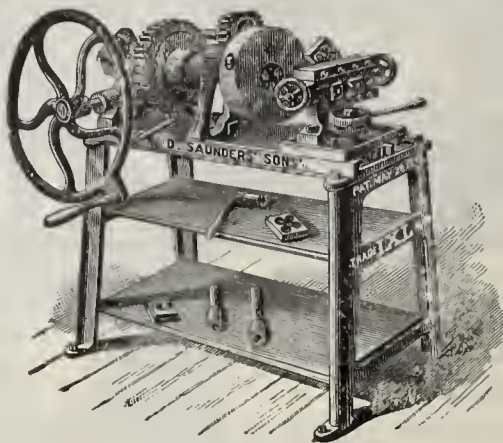
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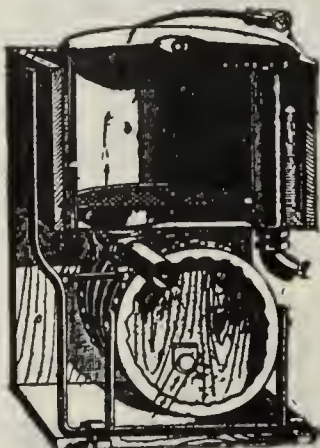
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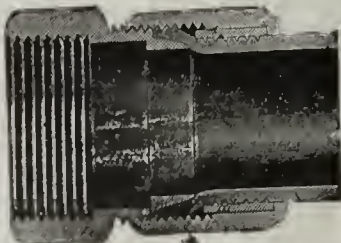
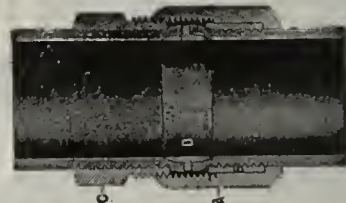
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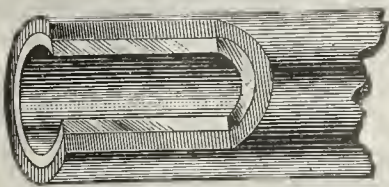
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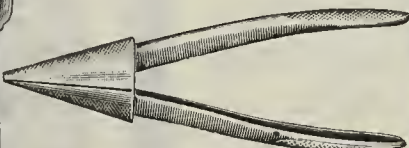
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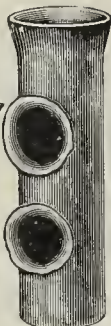
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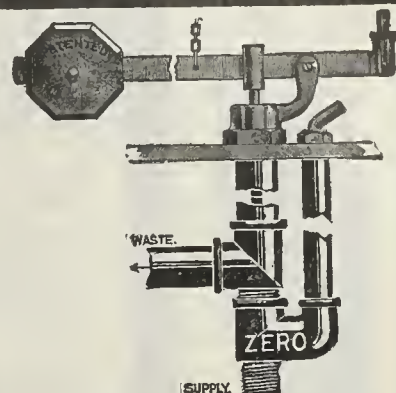


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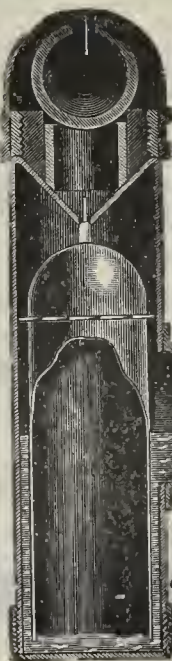


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Iron Production Still Increasing.

The monthly statistics of pig iron production printed by *The Iron Age* show that there was a further increase in the capacity of the blast furnaces in operation during the month of November, and that we entered December with another record breaking capacity. The weekly capacity of 266 furnaces in blast on December 1 was 324,761 tons, as against 320,824 tons on November 1. It is noted, however, that during November the actual product was not as great as the capacity working fore-shadowed. Quite a number of furnaces were idle for days and weeks at a time for lack of coal, and the returns of actual individual output showed a falling off from the normal. The tonnage thus lost is estimated at not less than 100,000 tons for the month. This probably helped in reducing stocks, which are now low, amounting to only 223,562 tons on December 1, a falling off of nearly 50,000 tons for the month. As an offset to the fact of this reduction, however, it must be taken into consideration that with some furnaces the stock on hand was increased from the current make, simply because it was impossible to get enough cars to ship to consumers, who were clamoring for material. These latest statistics furnish additional proof of the tremendous consumption of iron and steel that is going on. We are now producing pig iron at the rate of 16,850,000 tons per annum, as against the maximum record of 13,789,000 tons in 1900, and yet the little stock of iron now being carried is constantly being drawn upon. That such a condition of affairs has not led to a radical advance in prices of iron speaks well for the self restraint and good judgment of the manufacturers.

American Industrial Progress

The remarkable industrial progress made by the United States in the last few years has frequently formed of late the text for interesting utterances by foreigners, and more particularly traveled Englishmen, who have gained personal experience of the subject at first hand in visits to this country. Among the latest of those who have taken back with them lessons and experiences which they have imparted to their countrymen is Sir John Leng, a distinguished Scotch Member of Parliament, who delivered a rather striking address the other day on the subject of American industrial progress before the Dundee Institute of Engineers. He attributed the growing industrial and commercial supremacy of the United States largely to the fact of the alertness of the

American in adopting anything that is new, provided it seems to possess merits which make it in any way superior to the old. The American, he explained, is not afraid to make experiments; whereas the Britisher sticks to his old methods and ways until he is thoroughly convinced, through the experience of others, that the new is indisputably superior to the old. John Bull is constitutionally conservative, and his creed, as quoted by Sir John, is, "As it was in the beginning, is now, and ever shall be." This quality of his make up is the thing that prevents him from keeping abreast of the modern procession and retaining his former leading place in the ranks of industrial progress. The speaker referred to, in the course of his address, strongly urged upon his hearers the necessity of cultivating open minds and of applying themselves to their work in such a spirit that new ideas, new ways of doing things and new methods and appliances would be likely to suggest themselves. At the same time the whole tone of his remarks disclosed the conviction, latent in his mind, that the start taken by the United States in the industrial and commercial field was too great ever to be caught up with by their Old World competitors. In short, the latter are already badly overdistanced and can only hope to keep a place in the rear of their transatlantic cousins, whose quick intellects and promptness to adopt that which is new and better have already placed them in an unassailable position in the world's industrial progress.

Boilers and Radiators.

During the year a feeling has grown in the heating trade that the contracting steam fitter, as well as the boiler manufacturer, has derived substantial benefit from the frequent meetings which the manufacturers have held, and a confidential relation has been built up which has largely removed any prejudice that may have been felt earlier against these meetings. The effect, so far as boilers are concerned, has been that prices have ruled remarkably firm throughout the year. This fact lends special interest to the recent meeting of the manufacturers of heating boilers and radiators. It was quite generally known that some effort was being expended to formulate a plan for marketing boilers for the coming year on a basis that would be acceptable to all concerned. It is a quite generally accepted report that at this meeting an adjustment of the inconsistencies which heretofore have existed in the prices of various styles and kinds of boilers was effected, and that the changes in price were so slight as to be of little general interest. It is further reported that a policy was decided upon of endeavoring to make the new prices, which are practically the same as those now ruling, hold throughout the year. The opinion is freely expressed that it would be of benefit to the steam fitters throughout the country if they could feel certain that when they submitted an estimate and received a contract for work in the early part of the year, they could purchase the requisite boilers, when needed, at the prices ruling at the time their bid was made. They could also materially aid the manufacturers by placing the orders for the necessary boilers as soon as their contracts were

closed, thus enabling the manufacturers to know early in the season, to some extent at least, what demands for goods are likely to be made upon them.

While this is an important incident of the recent meeting, an equally important feature was the agreement said to have been reached by the manufacturers of radiators to adopt a similar course. During the past year there have been some apparently unnecessary fluctuations in the price of radiators and it is doubtful if the result was profitable to either the manufacturer or the contracting steam fitter. Any profit that may have resulted from these changes has probably gone into the hands of middlemen. While a fluctuating market may have advantages for the shrewd buyer who can give it careful attention, a stable market is far better suited to the majority of buyers of boilers and radiators, who, in all probability, will welcome the efforts of a number of the manufacturers to establish a market at this time of the year, which can be relied upon to hold for all orders which are placed with them. If those steam fitters who favor the policy outlined should support the manufacturers by placing all orders they secure as soon as received, they would confer upon the latter the substantial benefit to be derived from an advance knowledge of the demand that will be made upon them.

Business Methods.

The present tone and tendencies of business emphasize the importance of houses, whether in the manufacturing or merchandising branches of the trade, having and maintaining a high standard of business methods, not only in the management of their internal affairs, but also in the relations with the trade at large. It is, perhaps, inevitable in connection with the growth of establishments or the consolidation of many into one that there be, as we have before pointed out, more or less of the elimination of the personal relation between the sellers and the buyers of goods, but with this there should be an increased promptness and efficiency of service and careful attention to all the details of correspondence. Shortly after the organization of some of the great consolidations in which our readers are interested there was much complaint at the dilatory and unbusinesslike attention given to letters, and even to telegrams, thus increasing unnecessarily the difficulties of trade and adding to its wear and tear. Our readers will remember the protest which was raised against the practice, for which some excuse was found because of the practical difficulties of establishing and working the entirely new system which was requisite in view of the bringing together of a number of widely separated plants and under new trade conditions. The grounds for complaint on the part of the merchant have, however, in very large measure been overcome, and most of the consolidations take their place among the best conducted concerns in the trade.

An illustration of the spirit which is prevailing among them is given in the case of one corporation who make a point to conduct their correspondence on what they term the quick order; in the matter of making quotations or answering general letters it is a rule that their entire mail be disposed of on the day received. Where they find it necessary to get information from any of their factories their system is to have the local manager of that factory, who is thoroughly qualified for the position and understands the art of correspondence and business usage and proprieties, reply to the customer direct from the factory. When they must reply to telegrams they telegraph the factory concerned by code, and the factory

in turn telegraphs their customer fully in reply to his inquiry. Such a policy and the satisfactory service which results from it cannot fail to be appreciated by the trade. It will doubtless as a rule be found that a successful house which occupies anything of a prominent position in the trade has won its position and extended its business largely by the attention given to rendering its customers the best service in matters of this kind.

The principle under consideration applies obviously to merchants as well as manufacturers, and to the small as well as to the large houses, in proportion as they are brought into contact with the trade through correspondence. If there is reason for criticism on account of any lack of attention to this matter by large manufacturers, there is doubtless more ground for it in connection with the business methods of merchants occupying a narrower field and a less important position. The great houses almost necessarily have good methods and are characterized by care and promptness in their dealings with the trade, but with many merchants, who succeed indeed in making a living, there is sluggish movement and slipshod methods. With alert management, promptness in all relations with their trade and careful attention to all details of inquiries there would be a strengthening of their hold on their customers and a constant increase in their number. It is in direction of matters of this kind that personality will continue to assert itself and business ability to conquer success.

Editorial Notes.

A somewhat remarkable tribute to American oil is involved in a recent cable dispatch from London, to the effect that the District Railway of that city has issued an order that the use of American oil be discontinued everywhere on their line, except for office and signal lights. The reason given for this exception is that the American oil does not smoke the lamps. Presumably the order in question was given in the interests of the Russian oil refined in Scotland, but the admission made in the exception referred to is rather calculated to encourage British consumers in the use of the smokeless American product in place of the smoky home made oil.

The sheet metal manufacturers of Chicago are confronted with conditions which appear to threaten labor difficulties. The Amalgamated Sheet Metal Workers' Union have recently been endeavoring to secure an agreement with the Sheet Metal Manufacturers' Association, covering a scale of wages and providing for certain working rules. The employers were willing to pay a minimum scale of wages of 42½ cents an hour for all construction work, but reserved the right to give any scale to workmen sent outside of Cook County. The union have rejected this arrangement, and have demanded a straight scale of 42½ cents an hour. The officers of the union claim that they have received assurances from some of the contractors that the latter would sign individual agreements rather than have work stopped. It is expected that a number of others will refuse to make such an agreement, and therefore it will not be surprising if strikes should be declared against those refusing, and such work as they now have in progress be tied up. The union have had no agreement with the employers since the lockout in 1900, and are now of the opinion that they are sufficiently strong to endeavor to carry their point, but it remains to be seen if this can be done. Among the ranks of the employers are a number of resolute individuals who are not disposed to yield what they consider are their rights.

Meeting Between Capital and Labor.

A meeting of importance to the cause of conciliation between capital and labor will take place next week in New York City in the first annual session of the Industrial Department of the National Civic Federation. This body is already beginning to exert a marked influence in the settlement of disputes between labor and capital. Its aim is to urge upon employers and employed the adoption of the principle of conciliation and arbitration as the best means of preventing strikes and lockouts. What is known as the Conciliation Committee of the Federation was successful last summer in bringing several strikes to a settlement by its intervention. Capitalists, employers and workingmen are all greatly interested in the coming meeting, which will be held in the rooms of the New York Board of Trade and Transportation, 203 Broadway, on December 16 and 17. Among those who are announced to take part are representatives of many organizations of employers, railway associations and heads of large corporations and officials of the leading labor organizations. The principal topics to be discussed will be "The Effect of Machinery on Labor," "The Shorter Hour Movement" and "The Joint Agreement Method of Preventing Strikes and Lockouts." A permanent executive board will be selected and the scope of action and method of future procedure of the National Civic Federation will be decided upon. Among those who are expected to take part are such men as President Charles M. Schwab of the United States Steel Corporation, Senator M. A. Hanna, Abram S. Hewitt, Charles A. Moore of Manning, Maxwell & Moore, New York; William H. Pfahler of the Abram Cox Stove Company; H. W. Hoyt, president of the National Founders' Association; William H. Sayward, secretary of the National Builders' Association; Herman Justi, commissioner of the Illinois Coal Operators' Association; Samuel Gompers, president of the American Federation of Labor; President John Mitchell of the United Mine Workers; James O'Connell, president of the International Association of Machinists; President Theodore Shaffer of the Amalgamated Association of Iron, Steel and Tin Workers; Martin Fox, president of the Iron Molders' Union; Bishop Potter of New York; Archbishop Ireland of St. Paul, A. C. Bartlett of Hibbard, Spencer & Bartlett, Chicago; United States Labor Commissioner Carroil D. Wright, and many others.

Dun's Index Number, covering 350 quotations on commodities was \$101.37 on December 1, being an increase of 3.7 per cent., as compared with November 1, and 11 per cent. over December 1, 1900. This means that the cost of living has increased 11 per cent. in the past year. The general level of prices is now at the highest point in many years. These price records are compiled by *Dun's Review* by multiplying the quotations of all the necessities of life by the per capita consumption. Thus if a man purchased his supplies for one year on December 1 on the basis stated they would have cost \$101.37, while the same quantity of the same article would have aggregated only \$72.45 on December 1, 1897, the lowest point on record. They would have cost \$121.75 on January 1, 1860, when prices were the highest on record.

The export figures for the ten months ended October, just made public by the Treasury Bureau of Statistics, show that the exports of copper from the United States fell off in the period named about \$23,000,000, or 45 per cent. in value, below the exports in the corresponding months of 1900. The falling off is due largely to industrial depression and the consequent reduced demand for copper abroad, as well as to the increased production of copper in other countries and the reduction of price by foreign producers. Our copper exports, so far this year, have been the smallest in five years past, and the foreign demand seems to be declining from month to month. In quantity the falling off in the exports of copper was from 300,160,000 pounds in the first ten months of 1900 to 162,728,000 pounds in the corresponding months of 1901.

THE WESTERN STOVE TRADE.

The Western stove trade has settled down to the usual quiet condition which prevails in the closing month of the year. Reports from numerous manufacturers show a satisfactory volume of business for the year. The month of November witnessed quite a good demand, the trade in heaters having practically come up to expectations. In the vicinity of Chicago the demand for heating stoves during the fall months was very good, probably better than for some years. The generally prosperous condition of the people, particularly of the wage earners, enables them to add materially to their comforts and this has operated to the benefit of the stove trade.

The dealers in the city and its vicinity were conservative in their purchases, and it is gratifying to learn that they have quite generally been able to dispose of their stock and will have very few heaters to carry over to another season. Reports from rural districts indicate that in some cases dealers have been oversanguine and laid in a stock somewhat larger than their trade required. This will account for an occasional note of discord heard in the general chorus of satisfaction with the condition of trade. It is probable that the stove dealers who are also hardware merchants have in some instances been influenced in their purchases of stoves by the excellent demand for hardware. The hardware trade has seldom been so active as during the last half of this year. This was largely due to the great activity in building operations, but partly to the prosperous condition of farmers, who felt warranted in making improvements which involved the consumption of a great deal of hardware.

Manufacturers appear to have suffered very slightly from any disposition by the trade to cut prices. Practically no complaint is heard on this score. It seems that the volume of business was large enough to enable the current production to be satisfactorily marketed, and consequently no pressure was exerted to move goods.

The outlook for the future is considered decidedly encouraging. The fact that dealers have so generally disposed of their stove stocks and are showing themselves to be in prime financial condition by promptly paying their bills, together with the undoubtedly good condition of the country indicated by the general employment of workingmen at good wages, can be taken as an excellent foundation for the belief that the future can be depended upon to continue the good trade which has been experienced this year. Some of the manufacturers are so confident that they are beginning to predict that the coming year will witness a much heavier trade in stoves than the year just closing, provided, of course, that nothing occurs to unsettle the present satisfactory financial condition of the country.

The Late Leonard J. Huking.

Leonard J. Huking, who died in Brooklyn last week, was formerly in the employ of Abendroth Brothers as bookkeeper and salesman, but of late years had been with the Abendroth & Root Mfg. Company. Mr. Huking's death and that of John Frazer Mills of Abendroth Brothers were both published in the papers at the same time. Huking and Mills were always part and parcel of the Abendroth family, and it is one of those coincidences that both should die together. Huking was a very popular man in the stove business in the seventies. He spoke German, Spanish and English equally well, and was a man of education.

In the early seventies he was superintendent for the Abendroth Bros., a water company, established at Carson Sink, Nev. Fifteen men went there with him, 14 of whom died violent deaths. While there he established a Methodist church and Sunday school, and was protected from insult and injury by the miners. During this time he never carried a pistol, depending for safety on his moral influence. He remained at Carson Sink for two years, and the story of his experiences there was thrilling. During his stay there, though often threatened, he would never treat to a wrink. He won the favor of the miners by his care for the sick and helpless.

DISCREPANCY IN PROPORTIONING PIPES.

BY COMPARISON.

Some furnacemen may not have examined as carefully as I the article on "Warming a Chapter House," which appeared in *The Metal Worker* of November 9. If they had done so they would have noted the considerable discrepancy in the proportions between the hot air pipes and the space heated in some of the rooms. A study of the table that would induce an effort to discover the cause could not but prove beneficial. For instance, it would be seen that the proportion between the area of hot air pipe and the space heated in the halls is 1 to 123, while the proportion of the chapter hall on the fourth floor is 1 to 45, and of the small bedroom on the third floor is 1 to 20, and of the bathroom is 1 to 9. The natural inference might be that the pipes are too small in some instances and too large in others. Owing to the large amount of space in the hall it would seem that a larger pipe would be necessary for heating. It is no surprise to me, and probably not to many of the experienced furnacemen, that the pipe used has proved satisfactory. The pipe to the hall is a comparatively short one, and on account of the size of the halls and their height the air can flow out of this pipe very readily, and will naturally flow from it much easier than from pipes that lead into small rooms. Consequently a pipe of the same diameter will discharge into a hall which is open and three stories in height much more air than the same pipe would discharge into a room.

So far as the chapter hall is concerned, which is at the top of the building, it has a comparatively small wall and glass exposure, and is not so difficult to heat, as it is located over heated rooms. It is heated by means of a large vertical stack, in which a greater velocity will naturally be attained by the air, and, in consequence, a larger quantity of air will be discharged from the furnace through the pipe to this room than would be possible if the room was on the first floor.

In reference to the small bedroom and the bathroom, which seem to have pipes larger than is necessary, owing to the existing proportions shown, it is only necessary to say that when the hot air pipes are reduced too much in diameter the friction presented to the volume of air carried acts as a positive retarding force. This, and the fact that air traveling through small pipes naturally cools considerably before reaching the registers, reduces the efficiency. On this account it is necessary to have the pipes of ample size in order to have the air flow at all, so that the apparent discrepancy in the proportion of the pipes is due to sound common sense and reflects credit on the judgment of the designer of the heating system.

I always enjoy going over the various systems of heating which are presented in *The Metal Worker*, and while in some instances I would have arranged the work differently, I am free to add that I have derived benefit from examining them. It was after I had made a careful study of the system in the building which was heated by a Kelsey warm air generator that I thought it possible many readers had not noticed what had attracted my attention, and that they might be interested in the suggestions that came to my mind, if they were presented for their consideration.

Wrought Steel Registers.

The Hart & Cooley Company, New Britain, Conn., are manufacturing an attractive line of wrought steel registers, with solid wrought brass face plate and fitted with brass operating slide, and are about issuing a catalogue describing them. These registers are made from wrought metal only, no cast metal being used for any part. They are referred to as light in weight, with a consequent saving in freight, a uniform thickness of 1½ inches over all for all sizes affording a great saving in stock room. The operating slide is of extra heavy weight and strength to insure against breakage, and its construction is such, it is pointed out, as to insure a free and positive operation after years of use. The company state that their face plates will fit cast iron

borders of standard make; that holes in border frames for tin box loops are located same as in standard makes of cast iron; and that the net air openings of their registers will average the same as standard designs in cast iron. One design only is manufactured, the list of finishes being very complete. The company are at present making a line of sizes to cover all ordinary requirements, and will add other sizes as rapidly as possible. Their japanned registers are wrapped in paper. All other finishes are packed each register in a separate strawboard box, making a neat and durable package, protecting and preserving the finish. They make no charge for packing or cartage on shipments from factory, and assume all responsibility for breakage in transit up to point of delivery.

STOVES SHOULD BE READILY REPAIRABLE.

BY STOVEITE.

It would certainly seem, after all the years stoves have been manufactured, that the manufacturers themselves should have learned by this time that an essential feature in making a stove is to have it so constructed as to allow of it being repaired with the least possible inconvenience to every one concerned. Why anything so important should be given so little thought and attention is a mystery, unless it is because manufacturers are never compelled to take out old castings and put in new ones with their own hands. In the event of their ever attempting to do so, they would learn more about their business in five minutes than they would be able to forget in a lifetime.

From the way many stoves are constructed one would naturally think a studied effort had been made to put them together in such a manner as to drive stark mad the mechanic who is so unfortunate as to be called on to do any repairs to them.

Taking the old grates out of a range and replacing them with new ones should be a comparatively simple task; but with the ordinary range it is like taking Vicksburg to accomplish it. Of course, it is necessary to use bolts to fasten the parts together, but it is not always necessary to put the bolts in the most inaccessible places, so that the nuts cannot be reached with a wrench, a chisel, nor any other tool, when it is necessary to remove them.

Such a heathenish custom as making a range that must have the water back taken out in order to put in a new grate or brick rest is entirely out of place in the present century. And yet it is being done. The wonder is, some genius doesn't bring out a stove so fearfully and wonderfully made as to necessitate taking down the smoke pipe each time fuel is put on. Riveting the oven doors on cook stoves and ranges is another relic of barbarism that the retail dealer ought not to stand for any longer.

Manufacturers spend with a lavish hand in trying to produce stoves which present a handsome appearance, or work particularly well, but very little effort is made to construct them so that they can be repaired at a reasonable expense of time and effort.

As a rule, the dealer sells the stoves he is expected to furnish repairs for; so he can to a great extent select the makes of those most easily repaired, and push their sale. If this rule was followed more generally manufacturers would soon learn to cater to the tastes of the man on whom the brunt of the repairing falls. No dealer should give an order for stoves until he knows something about how they are constructed, as well as how they look; for no customer of his will thank him for selling him a stove so difficult to repair that it hardly pays to have small parts replaced when they give out. Perhaps the manufacturers, or some of them, would be pleased to have retailers who are practical men make suggestions. In any event, the retailer should take steps to get relief from some quarter. "Jest cussin'," as in the past, won't help matters.

THE Estate of P. D. Beckwith, proprietors of the Round Oak Stove Works, Dowagiac, Mich., have started up their plant again in full and with a force of 500 men.

RULES AND TABLES FOR HEATING WORK.

The following communication from a prominent house in the heating trade comments on the absence of standard rules and tables for the guidance of furnace-men in their work as a disadvantage to that method of heating. Furnace work has been said to be all "experiment and experience," without any tabulated record of methods from which rules could be formulated or calculations made of sufficient simplicity to be of use to the men who do furnace work. In the past few years there has been more study along these lines than heretofore, and more interest has been taken in such tabulated information as has been presented and is available.

While our correspondent points out the absence of such records and rules, and the consequent cost to the trade, which is cause for regret, the inability to supply them, much as they are to be desired, has led to the furnishing of rules for other classes of heating work which have been found reliable in an extended use. This disposition to help others is commendable and should be rewarded by those who have the best interests of the trade at heart by making a return in the presentation of such records, rules or tables as they may have found useful. We assure those who have any data of this character that the necessary space for its publication in our columns will be gladly accorded. Our correspondent's communication is as follows:

We think that the use of tables similar to the one shown on page 42 of *The Metal Worker* of November 9 is a step toward proper furnace heating, and will do away largely with the rank failures that have occurred so frequently in the furnace heating in the past. We use a similar table in making boiler estimates, and give it, as follows:

To select hot water radiation for residence heating each room should contain as many square feet of direct radiation as the square feet of glass surface, 5 per cent. of outside wall surface and 1 per cent. of the cubic contents of such room. For unusually exposed rooms add 10 per cent; to bathrooms add 10 per cent; to living rooms add 10 per cent.

For second-floor rooms deduct 10 per cent. from above rule.

For steam heating select two-thirds of the radiation required by the above rule.

We have found the above table to be very accurate, and if it contains any error it is in the way of providing more than enough of radiation. Probably this error sometimes prevents the securing of contracts that are given to dealers who provide less radiation, but we have found it absolutely safe and have never yet had a failure to heat with this rule used. We also use a base rule for estimating radiation for greenhouse work, which we give, as follows:

To get steam radiation for greenhouses: Three-tenths square foot of steam radiation will heat 100 square feet of glass 1 degree. To get radiation required, multiply each 100 square feet of glass surface by 0.3, and by the difference between the temperature required inside and the given temperature outside.

To get hot water radiation for greenhouses: Five-tenths square foot of hot water radiation will heat 100 square feet of glass 1 degree. To get radiation required, multiply each 100 square feet of glass surface by 0.5, and by the difference between the temperature required inside and the given temperature outside.

We have found these tables also very accurate, securing the best results. We think the trade lacks simple rules somewhat like the above that will enable estimating to be rapidly and accurately done. There seems to be more information on this subject in regard to boiler work than furnace work, and there is a modest fortune and a large share of fame awaiting the person who will write a book on furnace heating, giving in simple terms necessary information that can be understood both by the learned and the unlearned.

THE THOMAS, ROBERTS, STEVENSON COMPANY, Philadelphia, Pa., inform us that they are about erecting a three-story and basement warehouse, 55 x 158 feet, to give them increased office and storage facilities. In addition to the extensive line of Fortune coal heating and cooking apparatus, the company also make a fine variety of Fortune Gas Stoves and Ranges. Circulars advertising the Fortune Gas Heater and Ventilator, now being distributed among the trade, show one of the latest productions of the company.

Statistics on Stove Production.

In the item which was presented in *The Metal Worker* of last week the Weir Stove Company, Taunton, Mass., have departed somewhat from the secrecy which is customary in the stove trade as to the production of the various foundries. It is improbable that stove manufacturers generally are prepared to make a report on the number of stoves which they manufacture each year, and it is doubtful if any substantial benefit would attend a collection of such statistics. It is a matter of interest, however, to many stove dealers to know something about the stock which is carried by the houses from which they buy when the season is over. The statement is made that the Weir Stove Company had 6300 stoves on hand when the fall trade began. This would provide a stock of something over 20 stoves apiece for 300 customers. The further statement is made that the company have been making 75 stoves and 16 ranges a day in addition to further heating apparatus since that time. Assuming that September 1 was the beginning of stove buying, and that the foundry was running full to the end of November, this would give 90 days at practically 100 stoves a day, making 9000 more stoves available for distribution among those who had already laid in a stock and the late buyers. If the customers of the Weir Stove Company had properly protected their interests by having in stock, available for use, such a quantity of stoves as would be advisable for a good business man to carry, the producing capacity would show that the company were amply capable of replenishing the stock as it was disposed of.

New Monarch Goods for 1902.

The Monarch Stove & Mfg. Company, Mansfield, Ohio, makers of the Monarch line of vapor, oil and gas stoves and ovens, are at work upon their new line of patterns for the coming year, and will make some very attractive additions to the Monarch line of gasoline stoves, particularly in the Monarch New Method or the evaporating style of construction, and also in their complete line of high and low juniors. These patterns are virtually completed and photographs have been taken for the equipment of their salesmen. The Monarch wickless blue flame oil stoves will be quite radically improved over the patterns of last year. In fact, changes will be such as to quite give the company the right to say that Monarch wickless blue flame oil stoves for 1902 will be "right up with the drum major." They will also have a complete line of student lamp tank styles of construction, and in addition to this some other original features that will make these goods very attractive and desirable stock. Monarch asbestos lined ovens will be still further improved and the company are preparing for a very vigorous campaign in this department.

The Cahoun Soft Coal Stove.

The wide distribution and abundance of soft coal has been the incentive for many men to give time and study to the invention of soft coal stoves and other heat producing apparatus. Many constructions have been presented as a solution of what has proved a very difficult problem, but from their crudeness and similarity to laboratory apparatus, the great quantities of soft coal that are utilized are burned in stoves and apparatus not specially adapted to the purpose. The principal objections to the stoves used are that satisfactory combustion is not attained, and a regular fire cannot be maintained. Consequently an objectionable dense smoke is produced and the fire is low when most needed, having burned with uncontrollable and unnecessary fierceness at other times to the destruction of the vital parts of the fire chamber. This experience points to the need of specially constructed stoves and fire boxes for the use of this almost everywhere to be had fuel.

Of the many inventors who have attempted to supply this demand the method of bringing his invention to the notice of stove manufacturers adopted by E. R. Cahoun of Troy, N. Y., has much to commend it. After

having reached a point in his experiments which he thought warranted the production of his stove as an article of commerce, Mr. Cahoun had one of the fashionable stove pattern makers embody the principles of his invention in a cooking range of approved modern type and handsome design and appearance, so that an apparently completed article has been brought to the attention of stove manufacturers and the general public. Mr. Cahoun now has on exhibition at Troy, N. Y., several of his stoves in full operation, and invites inspection of them by anybody who may be interested.

ODD PLATES.

CHARLES W. BABCOCK still continues to be one of the popular salesmen of the Stove trade of New York City, to which he first came in the employ of George Starrett in 1870. He had previously been in the employ of Mr. Starrett at Richmond, Va. Mr. Babcock has an extensive acquaintance in the Stove trade, and also a wide knowledge of the Stoves, Ranges and Furnaces that have been on the market during his long experience, so that he is frequently consulted on repairs. For some time back he has made his headquarters with J. M. Litchfield, manager of the Mount Penn Stove Works' branch, at Beekman and Pearl streets, New York. In addition to his acquaintance with the Stove trade Mr. Babcock also has an extensive patronage among retail buyers, built up through his reputation for absolutely fair dealing. In showing goods he has no hesitation in naming the price, and in criticising many cheap goods as worthless he advises his customers to secure Stoves that have the merits of economy and efficiency, which make them satisfactory to purchasers.

THE PORTSMOUTH STOVE & RANGE COMPANY, Portsmouth, Ohio, are sending to the trade a leaflet devoted to their Mogul Furnace, which is presented as a heavy, substantial Furnace adapted for use in heating shops, large rooms, railroad stations and similar places, as well as small houses. It is presented as a plain, heavy Furnace with few joints, capable of doing good work and having a durability that will be appreciated.

THE CALDWELL FURNACE COMPANY of Fort Payne, Ala., have secured the plant formerly operated by the Alabama Hardware Company, and will make alterations and improvements and install new machinery for the purpose of manufacturing Furnaces, Heaters, Iron Mantels, Grates, &c.

THE MELLOTT HEATING COMPANY, 419 Market street, Camden, N. J., have been incorporated with a capital stock of \$50,000 to manufacture Stoves and Furnaces. Ell Thomas, E. B. Call, A. G. Thomas and P. B. Shirey are the incorporators.

THE STANDARD STEEL RANGE & MFG. COMPANY, Cleveland, Ohio, have moved into their new building. The company were compelled to seek more space on account of the large increase in their business. The new facilities give them double capacity.

THE MICHIGAN STOVE COMPANY are distributing exceedingly artistic circulars lithographed in colors. One of these received this week bears beautiful illustrations depicting scenes in child play. The printed portion of the circular refers to the claims made by the company for the superiority of their entire line of Garland Stoves and Ranges.

WILLIAM CRIBBEN, SR., who for 20 years had been foreman of the foundry department of the Cribben & Sexton Company, Chicago, died in that city on November 21. Mr. Cribben was a brother of Henry Cribben and was one of the veterans in the Stove trade.

At a recent meeting of the stockholders of the Pennington Foundry & Heater Company, at Pennington, N. J., the following Board of Directors was elected: Frank Le Bar, M. B. Moore, J. S. Burd, O. B. Gray, J. R. Bergen, E. S. Wells and J. W. Schneider. The board immediately organized and elected Frank Le Bar, president; M. B. Moore, vice-president and general manager, and J. S. Burd, secretary and treasurer.

It is announced that Richard A. Culter has recently consummated an arrangement whereby he becomes

sole owner of the Culter & Proctor Stove Company of Peoria, Ill. Mr. Culter has always held the controlling interest in the concern, the minority stock being held by the estate of his late partner, David C. Proctor. Mr. Culter could not purchase the stock held by the heirs until they had attained their majority, and this occurred only a month or two ago. We understand that Mr. Culter expects to make extensive additions to the already large plant, and to push more vigorously than ever the development of the Stove business.

Work on the new buildings for the Southern Stove Works, Richmond, Va., is making rapid progress, and the management now expect to take possession by January 1. When completed this will be one of the important Stove plants of the country, and will employ in the neighborhood of 500 men. One of the features will be a sheet metal department for the manufacture of Gas and Oil Stoves. The new plant will be in charge of C. M. Fleming. It is located in what is known as the West End, and it is expected that its presence will cause a demand for a number of new dwelling houses in that section.

THE plant and other effects of the Enterprise Stove Company, formerly known as the Joseph Bell Stove Works, situated in West Side, Muncie, Ind., have passed into the hands of Edwin J. Hickson, at the sale recently made by the Muncie Trust Company as receiver. We understand that Mr. Hickson will convert the present plant into an extensive establishment for the manufacture of iron and brass furniture, especially iron bedsteads. An unfinished lot of 500 Stoves and Heaters included in the sale will be completed and sold as soon as possible. Until they are all disposed of the old Stove plant will be continued in operation.

THE COLUMBUS STOVE WORKS, Columbus, Ohio, are sending out a four-page folder calling attention of the trade to the merits of the Columbus Steel Plate Range, which is constructed of heavy hammered and planished steel, and is offered in 42 styles and sizes. It is of an attractive exterior, the treatment of the end of the reservoir being especially rich and effective. The oven door is balanced and lined with asbestos. The oven bottom is constructed of No. 12 gauge, and the sides and top of No. 14 gauge metal. The body consists of No. 16 gauge steel, with heavy asbestos mill board between. The Columbus Stove Works are a comparatively new enterprise in Columbus, the proprietor being J. W. Hastings, who is well known throughout Central Ohio. He has had a long practical experience in the business, and the goods which he turns out are of a high order of merit.

THE SIMPSON STOVE & MFG. COMPANY of Pittsburgh, Pa., are distributing a very attractive and timely circular among the buyers of Gas Stoves, devoted to Simpson's Multiple Action Stove, which, in addition to being a strong radiator, also circulates the air. This Stove has a burner in two sections, so that the heating powers can be controlled. The circular also shows the Simpson Reflector Stove, an open gas fire, and the Duquesne Round Gas Heaters.

THE MCCLARY COMPANY of London, Ont., state that although their foundries are among the largest in Canada, they have been running full capacity all the year, as well as more or less overtime, and have enjoyed a volume of business which exceeded that of any corresponding period in their history. They have made a special feature of their Family Active Range, their Cornwall Steel Range and their Sunshine Furnace.

THE trade may have been somewhat surprised to see, in the advertisement of the American Furnace Company of St. Louis, Mo., printed in our last issue, a cut giving a sectional view of a furnace manufactured by another concern. We regret that this error occurred and call attention to the company's advertisement in the present issue, which presents the proper illustration that should have appeared last week.

United States Consul General Goodnow of Shanghai, China, reports the discontinuance of the exposition of American manufactures maintained in that city by the National Association of Manufacturers.

Window Ventilator.

The recent cold spell has caused many to tightly close their house and office windows to escape the chilling blasts that enter through the crevices, and, in consequence, many suffer from the lack of fresh air. To provide for the admission of the necessary fresh air, the Protective Ventilator Company, 129 Fulton street, New York, have made an air filtering device which can be used in connection with a window. These ventilators are said to be constructed on a scientific principle, and by their means a frequent change of air can be effected in an apartment without the risk and discomfort attending the opening of windows and the draft caused thereby. The ventilators are made of wood, and arranged so that the amount of air entering can be regulated and thrown toward the ceiling and diffused through the room. The company issue a four-page circular describing their device, and give a list of those who have used it with satisfactory effect.

Challenge Refrigerator Company.

The Challenge Refrigerator Company, Grand Haven, Mich., have issued two catalogues, one describing the Challenge Iceberg line and the other the Grand line. The first named catalogue comprises 56 pages, contains illustrations showing the rapid growth of the company's plant, gives a full description of the construction of the refrigerators and presents numerous illustrations of the styles manufactured under this name, the line comprising a great variety of sizes for domestic purposes and larger sizes for the use of grocers, restaurants, &c. The illustrations also show a number of most attractive constructions finished with sideboard features. The catalogue covering the Grand refrigerators comprises 24 pages, and also shows a complete line of sizes adapted to domestic requirements as well as larger sizes for grocers. This is a cheaper line, but the refrigerators are nevertheless manufactured with hard wood cases, and care has been taken with the insulating and the system of circulation to secure economical results in the consumption of ice.

The Defiance Cold Blast Lantern.

The Defiance Lantern & Stamping Company, Rochester, N. Y., are offering the lantern shown herewith. In Fig. 1 it is represented with the bail holding up the

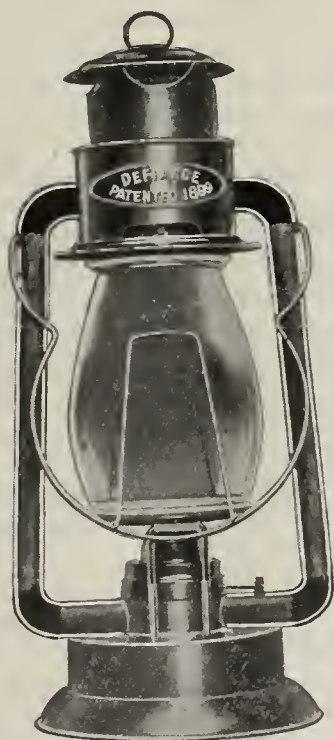


Fig. 1.—Defiance Cold Blast Lantern.

globe for lighting. The arrangement of the hinge and the fluted globe plate are shown in Fig. 2. The globe may be turned back to trim the wick, or the globe removed for cleaning. Thus the patent combination lift

and hinge globe exposes the burner in two ways for lighting. The fluted globe plate, shown by the smaller cut in Fig. 2, is referred to as being so constructed as to throw the cold air directly against the globe, keeping the latter cool and less liable to be broken, and preventing the flame flickering. The lantern, it is remarked, gives

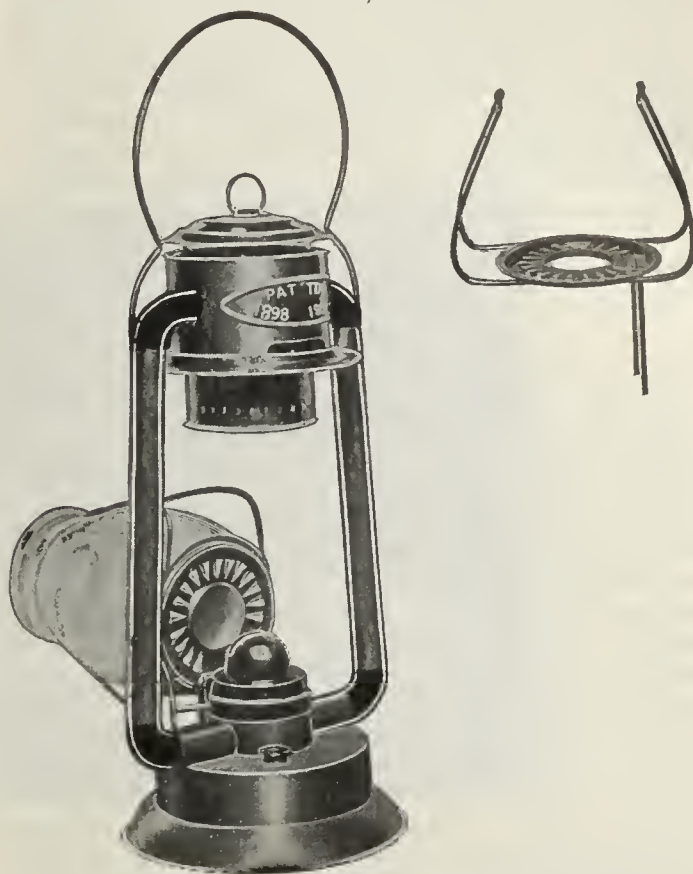


Fig. 2.—Hinged Feature and Fluted Globe Plate.

a bright, steady light, and is guaranteed by the company to be absolutely wind proof. They also make Nos. 0 and 2 Rochester lanterns, also in dash patterns.

Michigan Barrel Company's Refrigerators.

The Michigan Barrel Company, Grand Rapids, Mich., have just published a catalogue of Yukon, Economic and Chilkoot refrigerators. This catalogue comprises 74 pages, and thoroughly describes the system of insulation and circulation adopted for the different types of refrigerators manufactured. The eight walls of these refrigerators are 3 inches in thickness, and consist first of the zinc lining, next of a wood inner casing, then charcoal sheathing, next granite rock wool, then manila paper, next an air space, then more sheathing and finally the outside wooden case. The special points of the fixtures, hardware and shelves are the subject of detailed illustrations. The Yukon line is the leading line manufactured by the company. They comprise a great variety of sizes for domestic purposes, as well as for restaurants, grocers and others requiring larger space. The Economic line has as its special feature a white enamel provision chamber. This enamel is baked on galvanized iron, and is not paint, but a pure enamel. The special point covered by the use of this finish is the ease with which it can be cleaned. The enamel finish is also applied to some sizes of the Yukon line. The Chilkoot has been brought out to meet the demand for a moderate priced refrigerator.

Automatic Wringer Company.

The Automatic Wringer Company are operating a large factory at Muskegon Heights, Mich., in the manufacture of wringers, combination tub and wringer benches and washing machines. The line of wringers comprises the Automatic No. 10 and the Success. The Automatic wringer has an automatic adjustment which equalizes the roll pressure. A chain gear which connects the rolls avoids, it is stated, all side friction, and gives perfect freedom to the movement of the rolls. The machine, it is claimed, cannot be made to run out of gear. This machine is equipped with the new patented revolv-

ing clothes spreader, which compels the full use of the rolls, distributes the clothes evenly and feeds the fabric without friction. The rolls used are made of solid rubber, vulcanized on a cold rolled steel shaft. The Success wringer is also chain geared, and embodies many of the useful and important features of the Automatic machine, but is manufactured to be sold at a lower price. The combination tub and wringer bench is manufactured of hard maple, finished with malleable iron fittings. It is so arranged that the operator is never obliged to wring clothes left handed, the wringer being entirely separate, so that it can be reversed and always turned at the right hand side. The washing machine is named the Surf Washer, and is of the oscillating type. M. P. Janisch is president of the company and F. E. Jones secretary.

Ladders.

The Hercules Specialty Company, Erie, Pa., are sending to the trade a 32-page pamphlet devoted to the Hercules sectional ladders, scaffolding, step ladders and swinging stages. The catalogue shows, by means of half-tone engravings, the various styles of ladders and the safety connection used for fastening the different sections together, as well as the uses to which they can be put. One of the illustrations shows the sectional ladders extending to a height of 50 feet for painting the columns of a court house, another the ladders used for painting the steeple of a church, 45 feet above the roof, while other photographic reproductions display the ladders used for painting buildings, papering stairways, putting in valleys and gutters on roofs, putting on slate roofing, and for general building work. Extension planks, adjustable scaffold jacks, folding scaffold horses and step ladders are also presented in the catalogue, one page of which is devoted to the Hercules lawn swings, and another to the Hercules adjustable ironing board.

Stove and Hardware Dealers.

J. E. McNUTT, Confluence, Pa., advises us that he is desirous of selling out his retail Stove, Hardware, Tinware and House Furnishing Goods business in that town, with the intention of retiring from active work. Mr. McNutt says that the town of Confluence is favorably located on a line of railway, and that there is no similar store within 25 miles of him in any direction.

A STOCK COMPANY are organizing at Belfast, N. Y., to erect a factory for the manufacture of Tinware.

A LETTER from Bailey & Wilber, Vermilion, Ohio, dealers in General Hardware, Stoves and Tinware, and contractors for Plumbing and Sheet Metal work, informs us that their store and stock were consumed by fire on the night of December 3. They state that their loss amounted to \$5000, which is covered by an insurance of \$4500. The firm are temporarily located in the Wells Block, where they are continuing their regular business until they can secure more suitable quarters. They desire catalogues and quotations on goods in their line.

THE WINDSOR MFG. CORPORATION, Windsor, Conn., have been incorporated with a capital stock of \$10,000, of which \$5000 has been paid in. The new concern will manufacture a patent Meat Chopper and other specialties. The officers are Thomas B. Chapman, president; William S. Post, vice-president, and Robert H. Chapman, secretary.

THE LALANCE & GROSJEAN MFG. COMPANY of New York City are distributing a leaflet showing a reduced fac-simile of the label used on all their Agate Nickel Steel Ware. On the back of the circular are printed testimonials from cooking authorities on the excellence of this ware. The Agate Nickel Steel Ware is made of a steel body, nickel plated and covered with a good double coat of absolutely pure Agate enamel, thus rendering the ware absolutely safe and durable.

We have received from the Star Enameling & Stamping Company, Pittsburgh, Pa., a batch of circulars illustrating and describing some of their specialties, including the Star and Oval Dinner Pails, Pittsburgh Tin and Gal-

vanized Oil Cans and Wash Boilers, of which the company make a large variety.

GEO. A. STEELE has sold his Hardware, Stove and Agricultural Implement business in Frankfort, Mo., to R. S. Shotwell. Mr. Shotwell will move into a new store room, now under construction, about the middle of December. At present he is handling general Hardware, Stoves and Sporting Goods, but in the spring contemplates taking up Farming Implements and Vehicles in addition.

J. B. S. CASE has lately embarked in the Hardware line at Anadarko, Oklahoma. Besides Shelf and Heavy Hardware, Mr. Case is handling Stoves and Tinware and Sporting Goods.

J. A. McCOPPIN & Co. is the style of a firm who have lately opened up in business at Hillsboro, Ohio, as dealers in Hardware, Stoves, Iron and Steel, &c. The new house would be pleased to receive catalogues, price-lists, &c., relating to Hardware and allied supplies.

BEEVER BROS., Hardware merchants, Jellico, Tenn., have opened a branch store at La Follette, which will be conducted under the style of La Follette Hardware Company. The line carried embraces general Hardware, Stoves, Tinware, Sash, Doors, &c.

DUNN & WINNING have bought the Hardware, Stove, Farm Implement, Harness and Vehicle business of Starr & Sutton, Milo, Iowa. They have rearranged the store and made a number of improvements.

PACKARD HARDWARE COMPANY, New Bedford, Mass., have opened a branch store at Fairhaven, where they are carrying a stock comprising Shelf Hardware, Tinware, Farming Implements, Wooden Ware, &c.

MINERS' HARDWARE COMPANY, Joplin, Mo., have incorporated, with a capital of \$10,000, to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Miners' Supplies, &c. They have just moved into a large double store, 50 x 100 feet.

J. T. McDONALD & Co. are successors to Fields & Evans, Creston, Iowa, dealers in Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c.

COSMOPOLITAN INCANDESCENT GAS LIGHT COMPANY, 176 Madison street, Chicago, have gotten out an illustrated net price-list of a few of their staples, such as Mantles, Burners, Chimneys, Clusters, Outdoor Globes and Lamps, fancy hanging Lamp, Mica Canopies, Portables, &c. If interested in fancy Portables, fancy or colored Glassware and miscellaneous goods, they request the trade to send for their catalogue No. 4.

THE old buildings of the St. Louis Stamping Company at Cass avenue and Second and Third streets, St. Louis, Mo., are about to be thoroughly overhauled and refitted with new machinery for the manufacture of Tinware as soon as the reconstruction work is completed. The National Enameling & Stamping Company are spending about \$25,000 on the necessary improvements.

OFFICIAL ANNOUNCEMENT has been made that the annual meeting of the Minnesota Retail Hardware Dealers' Association will be held in St. Paul on February 26, 27 and 28 next.

J. W. WOLVERTON, formerly a member of the firm of Wolverton & Bird, Rich Hill, Mo., has opened a new store in Lawton, Oklahoma, handling Shelf and Heavy Hardware, Stoves, Tinware, Sporting Goods, Plumbing Supplies, &c.

T. J. O'NEIL has succeeded Martin O'Neill & Co. in the Hardware, Stove and Farming Implement business in Osage City, Kan.

GRIFFIN MFG. COMPANY, Erie, Pa., issue a price-list of Griffin's Pressed Steel Shelf Brackets, Folding Brackets, Lavatory and Flush Tank Brackets, Drawer Pulls, Door Bolts, &c. An illustration is given of their large new plant.

FRED. MACK AND ARTHUR BISHOP have formed a partnership in the Hardware, Tinware and Furniture business in Erie, Kan., under the style of Bishop Hardware & Furniture Company.

Two-Piece Sheet Metal Practice Boat.

BY MARTIN L. KAISER.

The desire manifested by readers of *The Metal Worker* to build boats of sheet metal I have satisfied for myself in making the boat shown in Fig. 1, and as it was not a very difficult job, others can readily follow or modify my plan. To aid them I give the following description of the methods I used for making a small boat of metal,

96 inches long, should be marked and turned up in the cornice brake, as shown in Fig. 2. This forms the keel and at the same time provides the requisite stiffness for the bottom. Both sheets should now be formed up in the brake or over a large size pipe, to present the appearance of a trough, as shown in Fig. 3. In one end of each trough should be nailed a temporary wood brace about 1 x 4 inches, and of a length corresponding to the beam of the boat, which in this case is 19 inches.

At the end opposite the brace the curve of the trough should be straightened out, and the two sides brought together to form the prows. Each piece will then look



Two Piece Sheet Metal Practice Boat.—Fig. 1.—General View of Boat.

without the use of patterns, and with no special machinery or models. I hope the information will be interesting to those who would like a light, fast boat—a little cranky, it is true—easily and cheaply made and adapted to either paddle or oars. This boat has proved perfectly safe in use during the past three seasons, and no defect in construction has yet appeared. I wish to state, however, that when I build the next boat of this kind it will be about the same width or beam, but 20 feet long instead of 16. The outrigger oar locks will also

like one-half of the boat, but with an exaggerated sheer, and will present the appearance shown by Fig. 4. In this operation care should be taken that the work be done a little at a time on each side, so that the keel may not be unduly strained, as it is very important that it

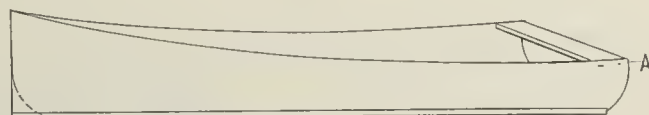


Fig. 4.—Forming the Prow.

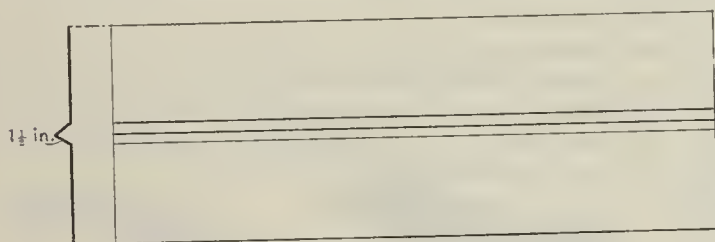


Fig. 2.—The First Bend in the Hull Strips.

project further from the boat, and the spoon oars will be 9 feet long instead of 7 feet.

One of the important requisites in the use of a boat of this kind is the ability to swim, though I have thus far had no occasion to exercise this accomplishment in using this or another sheet metal boat of somewhat wider beam and different construction. The boat, of course, is not intended for use in a gale. Nevertheless

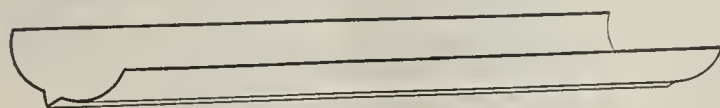


Fig. 3.—Forming the Hull.

there are other things less exhilarating than a race across the waves and an arrival at the landing with about 6 gallons of water thrown in by the wave crests.

The present description will have nothing to do with pattern cutting, but will be the method followed in evolving the first boat of the kind. To begin with, two sheets of No. 27 galvanized iron or steel, 30 inches wide and

should remain perfectly straight. At the end of the prow the V-shaped keel should also be drawn together, and both it and the curved sides gradually tapered out to the required size at the middle. The two ends of the prows may now be temporarily fastened together by means of $\frac{1}{2}$ x 3-16 inch stove bolts, and the corner at the bottom cut on a curve, as shown by dotted lines in Fig. 4.

Having determined the amount of sheer desired in the finished boat, the surplus metal should be cut away on a line marked for it. It should be remembered that the amount of sheer may be governed somewhat by the bevel of the sides of the boat at the top of the middle section.



Fig. 5.—The Prow Piece.

If the sides are perpendicular at the point marked A in Fig. 4 there would be no sheer in the finished boat, while the more the sides at that point are inclined outward the more sheer will be produced. In the present boat the sheer is only 2 inches—that is, the depth at the prow is but 2 inches more than the depth at the middle section. The sides of the boat may, therefore, be practically perpendicular.

The metal at the prow should now have all the buckles hammered out, which may be done by using a smooth faced hammer on the inside and holding the square head

on the outside, thereby stretching the metal. The prow ends may then be riveted together permanently. A piece of sheet iron should be cut the shape of the prow, as shown in Fig. 5, about $1\frac{1}{4}$ inches wide, and so placed that the outer edge should project about $\frac{1}{4}$ inch beyond the metal of the sides at the prow. Removing the temporary stove bolts, this piece should be riveted, together with the two thicknesses of metal at the prow, with rivets $\frac{3}{4}$ inch apart, and the projecting edge of the separate piece clinched over the raw edges of the prow. The seam should then be thoroughly sweated with solder. The air chambers should extend about 28 inches back from the points of the prows, and should be air tight.

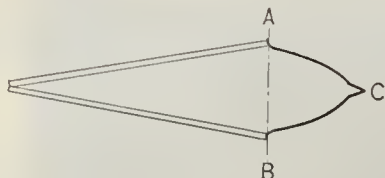


Fig. 6.—The Top of the Air Chamber.

They are to prevent sinking should the boat fill with water. A piece cut the required size with 1-inch flanges, and extended as shown at C in Fig. 6, should be bent down at the dotted line A B. This forms the top and one end of the air chamber, and should be riveted to the sides of the boat, so that the top of the air chamber will be $1\frac{1}{2}$ inches below the top of the boat. The extension C, Fig. 6, should be long enough so that it fits snugly in place, inclined at an angle, and should be carefully soldered to the sides of the boat, instead of being riveted. When this is done, the two parts of the boat (which should be alike) may be fitted together at the middle.

Two boards with straight edges 1 inch apart should be nailed to a level floor. The keel may be set down in the groove thus formed and a level used on the wood braces. A few blocks nailed to the floor and marked at the height of the sides will enable the boat to be removed from these primitive stocks and replaced exactly as be-

screws. The outer strip is $\frac{3}{4} \times 1\frac{1}{2}$ inches and is made thicker in order to more securely hold the tails of the screws, as shown at A in Fig. 8. The wood at the extreme end of the prows should be rounded at the points and bound with sheet copper fastened with small brass

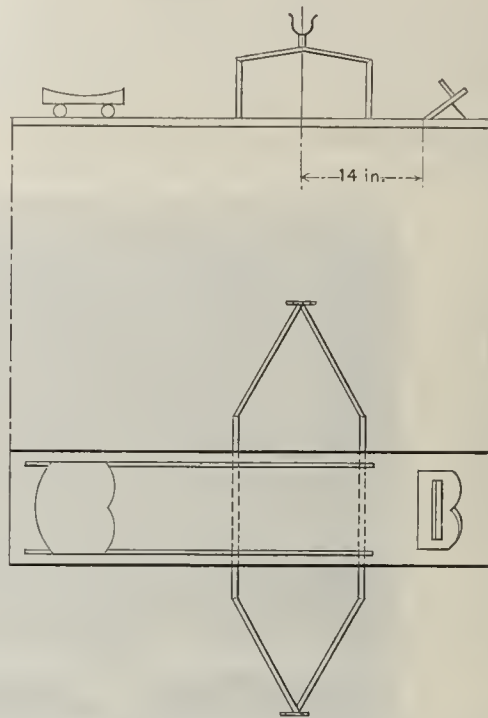


Fig. 9.—Plan and Side Elevation of Seat and Outriggers.

nails. To this copper may be soldered a small tube, in which may be inserted the staff of a small flag.

The boat, or canoe, at this point weighs 35 pounds, and with a double bladed paddle forms a very satisfactory fast canoe for use in comparatively quiet waters. It may be painted to suit the individual taste. To transform it into a practice boat the seat and oars may be

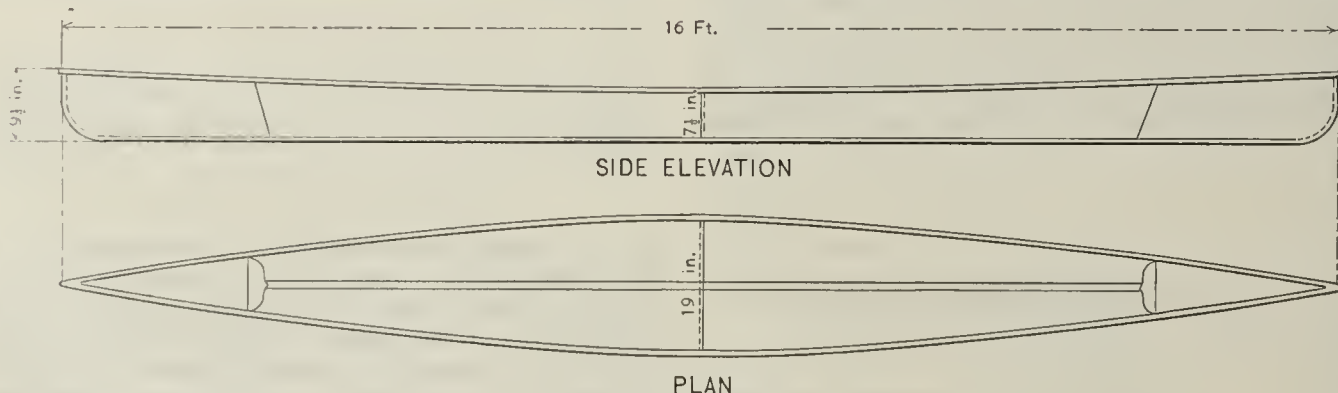


Fig. 7.—Plan and Side Elevation of Two Parts Connected.

fore, without frequent recourse to the level and square. The two ends should be accurately fitted together with a lap of 1 inch and lightly tacked together with solder. The boat should then be turned over and a chalk line stretched along the keel. Any inaccuracies should be corrected, and the middle connecting seam securely riveted with rivets $\frac{3}{4}$ inch apart and soaked with solder



Fig. 3.—Cross Section, Showing Gunwale Strip, Bottom Board and Oarlock Outriggers.

inside and outside. The boat will then present the appearance shown in Fig. 7, which gives both the plan and side elevation with dimensions.

The topsides, or gunwale, is composed of two strips of white pine with the sheet iron between, and screwed together, with screws about 4 inches apart. The inner strip, which is $\frac{3}{8} \times 1\frac{1}{2}$ inches, receives the heads of the

added. These are entirely separate from the shell. A white pine bottom board 1 foot wide, 4 feet long and $1\frac{1}{4}$ inches thick is shaved to fit the bottom of the shell near the middle section.

A pair of irons should be prepared by the blacksmith to fit loosely inside the shell at that point, and extend out over the sides 12 inches, joining together at the ends to receive the swivel oar locks, as shown in Figs. 8 and 9. These irons are $\frac{5}{8}$ inch round where they overhang the water and are flattened on the inside of the boat. The under side of the bottom board is gouged out, so that the irons set in the wood, and the irons are securely bolted to the board, taking care that the bolts are countersunk, so that they do not scratch the shell of the boat. A foot rest with braces and toe straps should be securely screwed to one end of the board, and guiding strips for the seat rollers fastened in about the position shown in Fig. 8. Inside the guide places, where the wheels are to run, two strips of hard wood are inlaid to take the wear.

The roller seat should be gouged out of a piece of white pine about 7 inches square, and provided with rollers, which may be procured at any hardware store. It should be borne in mind that the lower the seat and

rollers are placed the steadier the boat will be. With such a removable seat the position in the boat may be varied to suit, and as both ends of the boat are alike, the bottom board and seat may be reversed without necessitating the turning of the boat. Feathering spoon oars should preferably be used, although it takes a little practice to become accustomed to the proper turning of the wrist.

The cost of the material for the shell alone, including paint, should not be more than \$2.50. The time and trouble will be more than repaid by the pleasure of one season's use. The keel, as shown, would be insufficient for an ordinary boat, but for such a boat it is ample, because the boat, when loaded, acts as a keel for itself. It may be added that on one occasion a man weighing 150 pounds shipped so much water into the boat that it sank to a point where the water was half way between hips and shoulders, and the boat was then rowed ashore in the usual way, except that the boat itself was entirely under water.

Danzer's Lightning Edger.

We present herewith an illustration of Danzer's Lightning edger, manufactured by the Danzer Metal Works, Hagerstown, Md., and which has been patented by that concern. These machines are made for hand, foot and belt power. The edger is described as being so simple in operation that a boy can work it, while it does remarkably rapid work. The manufacturers claim that



Danzer's Lightning Edger.—Fig. 1.—View of Hand Tool.

by its use a box of 20 x 28 tin can be edged in ten minutes. It will also edge No. 27 pipe iron equally as well as tin. The edger will hook all four edges of a sheet for flat seam roofing put down with cleats, or it will hook two edges and square up the other two for

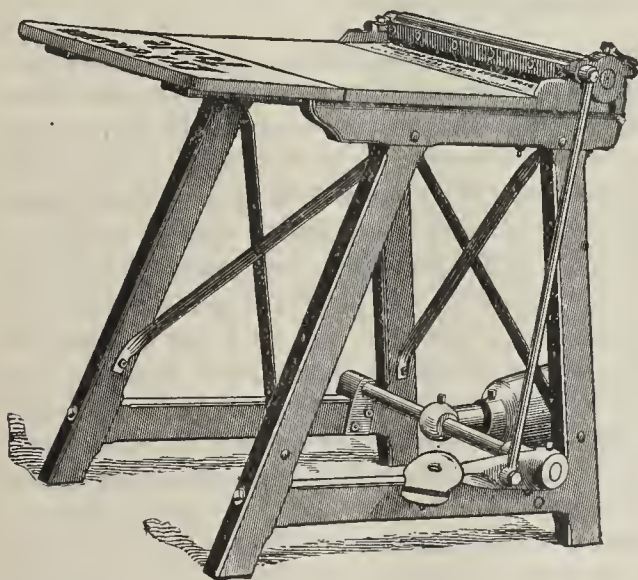


Fig. 2.—Edger for Foot Power.

flat seam roofing nailed down. The sheet of tin is edged by a short forward movement of the handle, the sheet being kicked out without moving it or turning it over the top of the machine. The tool is made to edge from 3-16 to 5/8 inch wide. It is made in two sizes, one known

as No. 20 being 21 inches wide and weighing 70 pounds when crated and the other, No. 30, being 31 inches wide and weighing 95 pounds. The foot power machine is built on a hard wood table strongly braced and bolted. This tool, it is claimed, has edged a box of 20 x 28 tin in six and three-quarter minutes by actual test. The edgers are made with solid cast iron bed and the finest steel blades.

THE NEW SHEET MILL OF LAUGHLIN NAIL COMPANY.

The Laughlin Nail Company of Wheeling, W. Va., have recently finished and put in operation a very com-

plete sheet mill plant, located at Martin's Ferry, Ohio. Active work on the erection of the plant was started last January. The mill is located just south of the large cut nail mill and shovel works of the Laughlin Nail Company, and at right angles to the tracks of the Cleveland & Pittsburgh Railroad. There is one main building, which contains the hot mills, and which is 60 feet in the clear and 286 feet long. On one side it has a lean-to 30 x 242 feet and another 30 x 286 feet. There are also three producer houses, each 44 x 27 feet, and boiler house 35 x 66 feet. The main building is of steel construction and is commanded by a 20-ton three-motor electric traveling crane, built by Pawling & Harnischfeger of Milwaukee, Wis. The equipment consists of two stands of roughing rolls, 26 x 44 inches, and four stands of hot mills, two of which are 26 x 44 inches and the other two 26 x 38 inches. There are also two stands of cold mills, 26 x 44 inches.

These mills are driven by two 32 x 72 inch Corliss engines, direct connected to rolls, and built by C. & G. Cooper Company of Mount Vernon, Ohio. Steam is furnished by two batteries of Sterling boilers, consisting of two boilers to the battery, of 258 horse-power each, giving a total steam capacity of 1032 horse-power. Steam is taken from these boilers through 6-inch expansion U bends to a 16-inch header. From there the steam is taken down through a 12-inch main steam line through a tunnel and to the engine through a 36-inch Austin receiver separator. It enters the engine under the floor, giving a clear floor space around the engines, there being no overhead pipes to interfere with the operation of the crane. The boilers are hand fired, coal be-

ing delivered by gravity railway from mines owned by the company. The ashes drop through the floor to an underground car and are taken to the river bank.

The electric plant consists of two 90 horse-power Harrisburg standard engines, direct connected to two Westinghouse generators. Switchboard consists of one Westinghouse black enameled board, containing two generator panels and two feeder panels. The machines are arranged to operate in multiple, in case any excess load is required over one machine.

The company receive slabs weighing from 350 to 550 pounds, 7½ inches wide, which are reheated in their own large plate mill, being given five passes in the roughing mill and one pass in the finishing mill. After being sheared by an automatic driven shear the bars are loaded into trucks and taken to the heating furnaces in the sheet mill. The bars are picked up by crane, taken to pair furnaces and are then handled by the mill crew; after being heated they are then taken to roughing mill for two passes, then to finishing mills, where they are finished. After being sheared the packs are opened and then taken to the cold rolls and cold rolled. The sheets are then picked up by a crane and taken to the annealing floor, where the pack is charged on annealed bottoms, annealed, and, after doing this, again picked up by the crane and placed on tracks, then delivered to the galvanizing, corrugating and metal ceiling departments. In case the black sheets are to be sold in the open market they are delivered direct to the car, a track having been placed in the mill for this purpose.

Particular attention is paid by the Laughlin Nail Company to the annealing of their sheets, as the firm believe that only by proper annealing can the best quality of sheets be obtained. The annealing furnaces were built by William Swindell & Brothers of Pittsburgh and are fired by producer gas. The furnaces are charged by a special device invented by H. A. Strauss, engineer, of Wheeling, who designed and built the sheet plant complete. The sheet and pair furnaces, six double Swindell patent water seal gas producers, 10 feet in diameter, were built by William Swindell & Brothers, the well-known engineers and contractors, of Pittsburgh.

While it is possible the Laughlin Nail Company will market black sheets occasionally, it is the intention of the firm to market practically their entire product in galvanized, corrugated and crimped sheets, corrugated roofing, pressed standing seam and rolled roofing, weather board and brick siding conductor pipe, eave trough and steel ceilings. The firm have installed complete equipment, consisting of the latest machinery, and have also built galvanizing pots on entirely new lines. Two warehouses have been provided for the accommodation of the black sheets, one adjoining the pickling room, for galvanizing, the other adjoining the paint mills.

Special attention has been given to the artistic appearance of the steel ceilings which the concern are making. A distinct departure has been made by the firm in the decorative quality of their steel ceilings. The concern have adopted a lapping joint, which is entirely new and which conceals the sheared edges of the plates, requiring no swedging and only sufficient nailing to hold the pieces up. The concern are already in receipt of quite a number of orders for their new designs for steel ceilings, which they are now executing.

The entire plant has ample shipping facilities, having direct connection with the Baltimore & Ohio, Wheeling & Lake Erie, Cleveland, Lorain & Wheeling, the Wheeling Terminal and the Cleveland & Pittsburgh roads. The company control river frontage, giving the advantage of river shipments. Taken as a whole this new sheet plant, with galvanizing, roofing and ceiling departments, is of modern equipment throughout and is certain to produce a maximum output of product. The first sheets were rolled in the new mill in October and the plant has been in successful operation right along since that time. While only four hot mills have been installed, provision has been made in every way for two additional mills, which will be built within a short time. The output of black sheets will be from 40 to 50 tons a day, practically all of which will be used in the roofing, ceiling and siding departments.

The officers of the Laughlin Nail Company are W. L. Glesner, president, and F. K. Dixon, secretary. The roofing and ceiling departments are under the direct supervision of J. K. Davies, the sheet mill by John Usher, and the galvanizing and corrugating departments by W. Bates Woods, who also designed and built the corrugating and galvanizing works.

What Should a Cornice Maker Know?

A question of interest to cornice makers generally is raised by a Philadelphia contributor, whose letter is as follows:

I receive *The Metal Worker* regularly, reading all parts, and in the Labor Exchange of a recent number I find the following advertisement from a metropolitan house:

Wanted—Three cornice and skylight makers; men who can take out and complete contracts from drawings. No tinsmith pretending to be a corniceman need apply.

In the locality of New York and Jersey City the advertiser will not find many men who can fill his wants. I was working in New York about three years ago and noticed an advertisement in the *Herald*, where such a man was wanted in a small city on the Hudson River. I telegraphed to the advertiser that I could fill his wants if the place was open. I received the answer during the afternoon, "Come up at once," and I went to see the man. He told me that he had had at least 15 men to come to him from New York. When he showed them a blue print and asked, "Can you make that cornice, bay window, pediment or skylight?" they all said, "Yes. Is it cut out and formed up?" Of course he said, "No. There is the print. I want what I advertised for." They all went back home. I learned that he had been advertising for five days. I took the job, and from the blue prints cut out and made up the work and finished it on the building.

Now, what I would like to know is, WHAT IS A CORNICE MAKER SUPPOSED TO KNOW? I ask this question because I have seen and handled some of the most ignorant men answering advertisements for cornice makers here in Philadelphia that I have ever struck. I have worked in and have had charge of some good sized shops, but became so disgusted with the charge of any part of a large shop that I am now working at the bench, and am able to get within 20 cents per day as much as the man who has charge of the shop.

This is a very interesting letter. Although it may seem to many rather severe, it is presented with a view to affording the trade an opportunity to discuss the question with a view to correcting such trouble as may exist, and aiding those who are in this field of labor to acquit themselves more creditably when called upon to work from blue prints. In this trade there are doubtless many men who are so qualified, and are considered invaluable by their employers. But these men have not reached that important position without making some methodical effort. *The Metal Worker* would be glad to have them give an account of the course they pursued in fitting themselves. It is a foregone conclusion that they have studied as well as worked with their hands. Doubtless they have read different books and have books for reference when especially difficult problems are presented. We shall be glad to have them give a list of the books they consider useful reading for the ambitious workman, whether a beginner or a hand who is desirous of becoming more proficient in his work. Some men could explain with advantage their method of reading blue prints and plans to different scales, the place where they begin to read, and their method of taking up the work in detail.

If the qualified members of the trade will be so generous toward their fellow workmen as to write such letters and explanations *The Metal Worker* would gladly present them. There can be no doubt it would make interesting reading and prove a great help in teaching what a cornice maker should know, and starting some careless men into taking a greater interest in their work, which would surely develop their skill and knowledge and add to their value. There is a demand for men who are something more than mere workmen, who have taken pains to acquire their education and become skillful and proficient.

Plans for Increased Sheet and Tin Plate Capacity.

The Pittsburgh *Chronicle-Telegraph* of December 12 says: "It has been decided by the American Sheet Steel Company to install additional mills for the rolling of heavier gauges, and the work is to be begun at a number of the plants in a short time. The American Tin Plate Company will also in the near future install machinery for the rolling of black plates for tin mills that will be largely automatic. It is said on reliable authority that machinery in this process will do from two-thirds to three-fourths of the work now done by hand on the hot mills, and the output will be greatly increased. With the new method it is estimated that the American Tin Plate Company will be able to compete with foreign manufacturers at home without the aid of tariff, which would result in the United States becoming the greatest tin plate manufacturing country in the world."

FLASHINGS.

T. J. COSTELLO, superintendent of the Tin Plate mills of the N. & G. Taylor Company at Cumberland, Md., has been appointed superintendent of the new plant of the Maryland Sheet Steel Company at that place. A large force is now at work transforming the mill.

THE JACKSON IRON & TIN PLATE COMPANY of Clarksburg, W. Va., are preparing to start their new works soon after the beginning of the year. All the machinery is now in position.

ONE of the principal recommendations of the Roof Cement manufactured by George Callahan & Co., 218 Front street, New York, is that it can be applied in a rain storm. The Cement is claimed to have the quality of sticking to a wet roof, as well as of always remaining elastic and never becoming hard in the packages, even if the cover is left off and the Cement exposed to the air. The fact that it can be used to stop leaks in roofs when water is running over the broken Tin recommends this Cement to the consideration of roofers and all interested in similar work.

CONTRACTS have been taken by the Bridgeport Boller & Pipe Covering Company, Bridgeport, Conn., for 3000 square feet of Gravel Roofing for the Lounsbery & Bissell Company in Winnipauk and for 2500 square feet for the Norwalk Mills Company at the same place.

THE SOUTHERN CAN COMPANY of Baltimore, Md., recently incorporated, with a capital stock of \$5000, by E. Edward Gibbs, Walter W. Crosby, Robert D. Schurder, Samuel H. T. Hayes and James F. Andrews, will manufacture Tin Cans and other articles of Sheet Metal.

THE LAUGHLIN SHEET MILL, at Wheeling, W. Va., has resumed after a temporary shut down.

M. J. HYLAND, Middletown, Conn., has contracts for roofing the Congregational Church in Groton, a masonic building in Greenport, L. I., the new factory of Wilcox, Crittenden & Co., the boiler house at the Hospital for the Insane, T. McDonough Russell's new residence and Schaefer's bakery in Middletown. The roofs will all be of Slate or Gravel.

THE deal for the Cumberland plant, sold recently by the Crucible Steel Company of America to Albert F.

Baumgartem of Pittsburgh, who in turn deeds it to the Maryland Sheet Steel Company for \$65,000, was put on record at Cumberland, Md., last week.

THREE of the ten mills in the Chester Works of the American Tin Plate Company, at Chester, W. Va., have been started up. The other seven mills will be put in operation shortly after the first of the year. This was formerly a Sheet plant owned by the Chester Rolling Mill Company, but was taken over by the American Sheet Steel Company. The Sheet rolls were afterward removed and tin rolls substituted, the plant now being owned by the American Tin Plate Company.

THE PARKERSBURG IRON & STEEL COMPANY of Pittsburgh, with works at Parkersburg, W. Va., are building a forge mill in addition to their six-mill Sheet plant, the approximate cost being about \$100,000. The Sheet mills of this concern are nearly ready for operation and will be started this month. The forge mill will consist of puddling furnaces, knobbling fires, Bar mill and Skelp mill, with necessary equipments.

THE CARNAHAN TIN PLATE & SHEET COMPANY of Canton, Ohio, placed two mills of their new plant in operation last Monday. The housings and spindles for three hot mills are in position, and the rolls have been placed in one of them. The new offices of the mill have been completed.

THE WHITAKER IRON COMPANY, Wheeling, W. Va., manufacturers of Black and Galvanized Sheet Iron, Tin and Terne Plate, are now operating four Tin mills and also four Sheet mills. They are adding three new Sheet mills, which they will have in operation in March or April next. The Whitaker Iron Company and the Wheeling Corrugating Company are allied interests and operate between them four Sheet mills, four Tin mills, eight Tinning sets and a galvanizing department. N. E. Whitaker is president of the Whitaker Iron Company, and A. C. Whitaker is secretary.

LOUIS C. KRUMMEL has resigned his position as chief engineer and general shop manager of the machinery department of the American Can Company, and has established himself as consulting mechanical engineer at Austin, Ill. He has been connected with the E. W. Bliss Company of Brooklyn, and the American Can Company in Chicago, as technical member of the firm operating the Rudolphi & Krummel Machine Works, Chicago, covering a continuous period of 15 years.

THE VULCAN SHEET METAL COMPANY, Denver, Col., recently organized, have leased a plant and will make Sheet Steel pipe and other Sheet Metal Work. The company are closely allied to the Vulcan Iron Works Company of that city.

IN railroad circles the report is current that W. B. Leeds, who has been prominently identified with the Tin Plate industry and Moore group of Iron consolidations, is to become president of the Rock Island Railroad.

THE CARNAHAN TIN PLATE & SHEET COMPANY, Canton, Ohio, manufacturers of Tin and Terne Plates and Sheet Steel, have made plans for the building of an open hearth Steel plant and will probably commence work on it in the near future.

WILLIAM REIFERSCHIED, a Cornice maker and Sheet Iron worker of Streator, Ill., has invented an airship and has been fortunate in securing the backing of a number of Chicago capitalists to make a practical demonstration of his invention. It is stated that the demonstration is to be made in the spring. The airship consists of a cigar-shaped Aluminum frame, 80 feet long, to contain the balloon, with mechanical appliances attached, which, it is asserted, will enable the ship to be dirigible.

THE annual meeting of the American Tin Plate Company is announced to be held in Jersey City, N. J., January 21, 1902.

THE VULCAN WESTERN COMPANY, Streator, Ill., are daily shipping large quantities of Tin Scrap to Ensley, Ala. The company purchase Tin Scrap, which they subject to a special chemical process by which they remove the Tin, after which the Scrap is baled and shipped to steel works for remelting purposes.

OPENING OF THE TWENTY-FIRST SEASON OF THE NEW YORK TRADE SCHOOL.

The formal opening of the day classes of the twenty-first season of the New York Trade School took place on Wednesday afternoon in the auditorium of the school, at Sixty-seventh street and First avenue, New York, the actual assembling of the classes having taken place on Monday. The hall was well filled by young men who are enrolled for instruction in the various trade classes for the 1901-1902 season. Superintendent H. V. Brill introduced President R. Fulton Cutting of the Board of Trustees, who extended a cordial greeting to the young men.

Mr. Cutting, in the course of an earnest and practical talk to the students, impressed upon them the fact that they were entering upon what would probably prove the most important four months of their lives, and that the time spent at the New York Trade School was a precious opportunity for each student to lay broad and deep foundations for a subsequent successful career in his chosen trade. The trade school, the speaker said, gives the opportunity to learn, but the results depend absolutely upon the pupils themselves. The school itself can do little or nothing for them unless they themselves take full advantage of all the opportunities offered by the school. In that way success will come. It is not alone the brainy men who make a success of life; all who go about it in the right way can achieve success, provided they have the fundamental requirements. There is no royal road to success; success never comes to a man—he has to earn it. Success has no motive power of its own; human energy alone supplies that; earnest, diligent, hard, patient work is needed; this is the secret of success. But a permanent success also requires another element—that of character. Honesty and straightforwardness must be behind the work. The aim of the New York Trade School, said Mr. Cutting, is not only to make good tradesmen, but also good Americans. That is what it stands for primarily. He closed by urging the men not to be afraid to do the best work that lies within their power, irrespective of any arguments that may be brought forward by certain trades unions, to the effect that a man should not do more than a certain amount of work a day. This is a profound economic error. Every tradesman should aim to do the most and best work he can.

Mr. Cutting then said that he would like the boys to hear from one or two men who had themselves obtained success in the trades in which they were about to embark, and introduced Edward Murphy, one of the committee of the school. Mr. Murphy, who is always a favorite with the Trade School boys, received a hearty ovation when he came forward to speak. In the course of his remarks he paid a fine tribute to the memory and work of the late Colonel Auchmuty, the founder of the school, whom he characterized as *par excellence* the friend of the American boy. After some practical and kindly words of advice and encouragement to the new pupils Mr. Murphy gave place to John Beattie, another veteran member of the school committee.

Mr. Beattie is a speaker who is always acceptable to the Trade School students and his remarks were listened to with close attention. Among other things Mr. Beattie said that the young men now before him were embarking upon the opportunity of their lives. In his early trade life it took him at least four years to acquire the theory of his trade, and then he did not get it nearly as well as the New York Trade School students were able to do in four months. He urged them to make up their minds to work hard and derive all the benefits possible from their present opportunities. Each student must in future be one of two things—either simply a cog in the wheel or the hand that directs the wheel. In coming to the New York Trade School young men were given the chance to qualify themselves for becoming directing powers rather than mere machines. The meeting was closed with a few words of welcome to the new students by Superintendent Brill.

The enrollment in the various classes this season has been fully up to the average. The day plumbing class

starts with 94 members, drawn from about 25 States; the electrical class has 50 members; carpentry, 24; brick-laying, 15; house and sign painting, 15, and the cornice class, 8 members. It was remarked that the young men who have entered the school this season appear to be of a higher type of intelligence than ever before, proving that the advantages offered by the institution are being more widely appreciated from year to year.

We print below a list of pupils in the day plumbing class:

DAY PLUMBING CLASS, 1901-1902.

Allen, Loren D., Hammond, N. Y.
 Berry, Dwight C., Roseburg, Ore.
 Borthwick, John A., Portland, Ore.
 Baumann, Charles V., Newark, N. J.
 Becker, George, Maquoketa, Iowa.
 Buchtenkirch, John, New York City.
 Coffey, James, Charleston, W. Va.
 Cook, William G., Bushkill, Pa.
 Cheever, John E., Manchester, Mass.
 Derrenbacher, M. F., Kingston, N. Y.
 Doran, Edward F., Greenville, N. J.
 Dour, Leon T., New York City.
 Doering, Frank L., Wapakoneta, Ohio.
 Dudley, Alfred A., Montclair, N. J.
 Delacom, George A., Derrick City, Pa.
 Dickinson, James W., Port Washington, L. I., N. Y.
 Evans, John T., Butte, Mont.
 Enright, Michael J., Raritan, N. J.
 Ford, Thomas J., Brooklyn, N. Y.
 Flinn, James, Youngstown, Ohio.
 Ford, Paul J., Brooklyn, N. Y.
 Ford, Francis, Brooklyn, N. Y.
 Fretz, Harry N., Cedar Grove, N. J.
 Fall, Martin, Logansport, Ind.
 Gay, Henry K., Nashua, N. H.
 Garrison, Ralph H., Vineland, N. J.
 Gunther, John M., Jr., Spring Valley, Ill.
 Gilson, Geoffrey G., Corry, Pa.
 Grant, William D., Kane, Pa.
 Griswold, Albert E., Holyoke, Mass.
 Gould, Clarence R., Friendship, N. Y.
 Gray, Clarence A., Allegheny, Pa.
 Howard, John G., Raleigh, N. C.
 Hansen, Andrew, Algona, Iowa.
 Henry, Edward W., Jersey City, N. J.
 Hogan, Thomas E., New York City.
 Hanson, Harry L., Butte, Mont.
 Hummel, Andrew J., New Ulm, Minn.
 Hewes, Frank L., Osceola Mills, Pa.
 Harding, Stedman, Tunkhannock, Pa.
 Johnson, James T., Wheeling, W. Va.
 June, Carrol A., Brandon, Vt.
 Keller, Paul H., Shelton, Conn.
 Kennard, Frank C., Clearfield, Pa.
 Kane, Thomas A., Brunswick, N. J.
 Kane, Michael J., Brunswick, N. J.
 Konow, Louis, Newark, N. J.
 Killmer, Carl P., Olean, N. Y.
 Klinghorn, Lyman J., Hardwick, Vt.
 Koehnlien, George C., Dwight, Ill.
 Lawrence, Thomas H., Corning, N. Y.
 Ledlg, Otto A., Newark, N. J.
 Loeble, Herman, Troy, N. Y.
 Lavelle, James A., New York City.
 Michels, Edward A., Rondout, N. Y.
 Minor, Halsey P., Farmer, N. Y.
 Mason, Metcalf P., Greenfield, Mass.
 Miller, Benjamin F., Gainesville, Fla.
 Manuel, Adonis A., Baton Rouge, La.
 Milano, Frank, New York City.
 Michael, Carl H., Talladega, Ala.
 McKnight, George F., Owen Sound, Ontario, Can.
 McKittrick, William B., Brooklyn, N. Y.
 Nacey, Harry M., Chicago, Ill.
 Ormsby, Rexford P., Norwich, N. Y.
 Plastow, Joseph W., Greenville, N. J.
 Parent, Herbert J., Lewiston, Maine.
 Pierce, Charles H., Pittston, Pa.
 Ashley, Charles P., Brooklyn, N. Y.
 Russell, David M., Waynesboro, Pa.
 Rhodes, Theodore S., Great River, L. I., N. Y.
 Reed, Howard B., Battle Creek, Mich.
 Reynolds, Ross A., Aurora, N. Y.
 Robinson, Leslie, East Quogue, L. I., N. Y.
 Rushmore, Albert E., Westfield, Pa.
 Ruggles, Archie E., Fowlerville, Mich.
 Rote, Charles A., Stockbridge, Mass.
 Scott, Charles T., Peekskill, N. Y.
 Siegel, Edward, Brooklyn, N. Y.
 Siefert, Fred A., Peoria, Ill.
 Shimp, J. Irvin, Lewistown, Pa.
 Trimble, Andrew P., Pittsburgh, Pa.
 Travis, Thomas R., Wilmington, Del.
 Trevithick, Thos., Jr., Wilkes-Barre, Pa.
 Vores, Alfred D., Jr., Brewster, N. Y.
 Williams, Arthur R., Cohoes, N. Y.
 Welander, Carl A., Moline, Ill.
 Walrond, Lorne B., Petoskey, Mich.
 Wilker, Clark H., Ionia, Mich.
 Wenger, Charles H., New Philadelphia, Ohio.
 Widmayer, Fred., Jr., Long Island City, N. Y.

DAY CORNICE CLASS, 1901-1902.

The following are the names of the pupils enrolled in the day cornice class:

Bauman, Herman, New York City.
 Elliott, Charles M., Kansas City, Mo.
 Kohout, Louis, New York City.
 Kastner, Albert, Louisville, Ky.
 Pehl, Max W., Poughkeepsie, N. Y.
 Schrumph, William T., West Hoboken, N. J.
 Wieber, Frederick E., Kingston, N. Y.
 Weeber, Otto J., Guttenberg, N. J.

A fine addition to the plant of the New York Trade School has lately been completed, in the erection of a central building containing on the ground floor the offices

of the school, with a spacious room on the second floor, which is now being fitted up as a library and reading room, for the use of the students. This new feature of the school is one that is likely to be greatly appreciated by the pupils, who will be able to use the library and reading room each day and evening of the week, and make it, in a measure, a club room. This meeting place is calculated to develop a fraternal and social spirit among the attendants at the school, which is highly desirable.

One of the most successful and interesting lines of work lately introduced in connection with the Trade School is the course of lectures for journeymen steam fitters and journeymen electrical workers, given each week by Arthur A. Hamerschlag. Mr. Hamerschlag reports that the attendance on these courses is considerably larger than ever before, and that the interest in them is constantly growing. Ninety-seven men are attending the electrical course and 76 the course on steam engineering. As these courses of lectures are not entirely free, a fee of \$1 being charged for each course, the large attendance proves a marked appreciation of the advantages offered, on the part of the men for whose benefit the lectures were initiated. Mr. Hamerschlag has inaugurated a very useful plan in connection with these lecture courses in preparing a printed synopsis of each lecture, which is distributed to the men and taken home by them.

ASSOCIATION OF MASTER PLUMBERS OF THE ATLANTIC COAST.

As a result of the call sent to the master plumbers of Delaware, Maryland, Virginia and the District of Columbia, 65 master plumbers met in Emerald Hall at Norfolk, Va., last Monday, for the purpose of organizing an Association of Master Plumbers. The delegates came from Wilmington, Del.; Washington, D. C.; Baltimore, Salisbury and Cumberland, Md., and Richmond, Lynchburg, Newport News, Portsmouth, Berkeley and Norfolk, Va.

The convention was called to order by James F. Traynor of Wilmington, Del., and a temporary organization was effected, with William H. Barnard of Norfolk, chairman; W. J. Kilby of Baltimore and Harry A. Miller of Wilmington, secretaries, and J. R. Guy of Norfolk, sergeant-at-arms. Chairman Barnard delivered an address of welcome, which was responded to by John Trainor of Baltimore. Committees on Credentials, By-Laws and Constitution and Rules were appointed, after which an adjournment was made. The Committee on By-Laws and Constitution submitted their report at a later session, and a constitution and by-laws, based on those of the National Association of Master Plumbers, were considered separately and adopted.

The name chosen for the organization was the Association of Master Plumbers of the Atlantic Coast. The new association will affiliate with the National Association. At the close of the routine business the following officers were elected for the ensuing year:

President, James F. Traynor, Wilmington, Del.

Vice-President, Lloyd Mitchell, Baltimore, Md.

Recording and Financial Secretary, J. S. Eaton, Wilmington, Del.

Treasurer, W. H. Barnard, Norfolk, Va.

Executive Committee: E. L. Guy, Norfolk; W. A. Rothrock, Baltimore, Md., and W. D. Nolan, Washington.

The place for holding the next annual meeting was left in the hands of the Executive Committee. On Tuesday the delegates were given an oyster roast at the Master Plumbers' Club, at Willoughby Beach.

EDWARD WOODS, who for nearly 40 years had been in the plumbing business at 38 Myrtle avenue, Brooklyn, N. Y., and who was formerly the partner of John H. Walker, died at his home, 341 Dean street, on Friday, December 6, of heart disease, in his fifty-fifth year. He leaves a widow and a daughter.

The Federal Boiler & Supply Company.

The Federal Boiler & Supply Company have been incorporated under the laws of New Jersey, with a capital of \$3,500,000. The new company are a practical consolidation of the Kellogg-Mackay-Cameron Company of Chicago; the Kewanee Boiler Company of Kewanee, Ill.; the Model Heating Company of Philadelphia, and the Uniontown Acme Radiator Company of Uniontown, Pa. The principal office of the new company will be in New York City. The directors of the company are: E. E. Baker, Clarence V. Kellogg, W. H. Pfahler, B. F. Baker, A. C. Mott; J. P. Dugger, James Mackay, W. A. Cameron, E. P. Mott, L. G. McCrum and W. D. Kellogg. The officers of the company are: Clarence V. Kellogg, president; W. H. Pfahler, vice-president, and B. F. Baker, treasurer. A large warehouse will be added to the plant of the Kewanee Boiler Company as one of the equipments of the new concern. The business of each of the concerns included will be managed separately as heretofore, so far as the solicitation and shipment of orders is concerned.

New Wrought Iron Pipe Mill.

The Carnegie Tube Company of Carnegie, Pa., have notified the trade that when they are in the market for wrought iron pipe they would be pleased to have the opportunity to quote on pipe of their manufacture. The mill is about ready to run, and they hope to be in successful operation before January 1. The company are now booking orders for January delivery. They will manufacture their own skelp, and it is their purpose to turn out a superior quality of strictly wrought iron pipe of standard weight. They think they are justified in making this statement in advance of actual operations, from the fact that their general manager, T. B. Everson, is a man of very wide experience in the manufacture of this kind of goods, and his acquaintance with men and methods has enabled the concern to construct a plant modern in every particular, which will be operated by men of proved ability and skill. The initial capacity of the plant will be from 60 to 80 tons of $\frac{1}{8}$ to 3 inch butt weld pipe per day. The officers of the company are A. A. Hutchinson, president; R. M. Vincent, vice-president; O. F. Grant, treasurer, and T. B. Everson, general manager.

The P. and S. S. League.

One-sided contests ruled in the Plumbing and Steam Supply League bowling tournament this week in New York. On Monday night the Brooklyn team of the Ronalds & Johnson Company won two games, the team of Thomas G. Knight losing two games and the Central Foundry Company team breaking even. The feature of the evening was the score of 181 by E. E. Benas of the Thomas G. Knight team. On Thursday night the Dimock & Fink Company team won both and the team of the H. P. Read Lead Works lost both of their games, the team of C. S. Locke & Smith winning and losing. The Dimock & Fink Company team scored 772 in their first game, to which F. Hogenaur contributed 194.

Quick Work.

One of the customers of the Makin-Kelsey Heating & Mfg. Company of Philadelphia recently requested them to examine the boiler and hot water heating plant in his city house, to see that it was all ready for winter use. Men were sent to the house with instructions to examine the radiators and connections, air valves and all piping, to clean the boiler and to examine it, then fill the boiler and the system and fire it, so as to be sure that it was in good working order. All of the preliminary work had been completed and the water was turned on to fill the system while the men stopped for dinner. When the system was filled an examination was made, when it was found that one section of the boiler, which was made by the Gurney Heater Mfg. Company of Boston, Mass., was cracked. This was immediately reported at the office and the Gurney Heater

Mfg. Company in Boston were called up by means of the long distance telephone at 3 o'clock in the afternoon. The section needed for repairs was ordered and shipped by express that day, and the next afternoon at 1 o'clock the boiler section was delivered at the residence and the men were set to work to make the repairs to the boiler. This episode speaks well for the enterprise of the Makin-Kelsey Heating & Mfg. Company, and for the promptness of the Gurney Heater Mfg. Company in attending to the wants of their customers.

Brass Goods Men Meet.

The annual meeting of the Association of Manufacturers of Plumbers' Brass Goods was held in Pittsburgh, Pa., in the early part of the week. After reaffirming the present prices, the question of a possible consolidation was discussed without action. After the following officers were elected, the meeting adjourned to meet again in Washington, D. C., with the jobbers and manufacturers on Thursday:

President, A. D. Sanders of Peck Bros. & Co., Chicago.

Vice-President, C. K. Sanborn of Haydenville, Mfg. Company, New York.

Secretary, W. T. Doyle, Milwaukee, Wis.

Treasurer, J. B. Calvledge of Hoffman & Billings Mfg. Company, Milwaukee.

About 40 concerns were represented at the meeting, among whom were the Bailey-Farrell Mfg. Company and the Standard Sanitary Mfg. Company of Pittsburgh.

The Barrus Apparatus for Testing Steam Pipe Coverings.

George H. Barrus, of Boston, Mass., installed at the Manhattan Railway power house in New York apparatus for ascertaining the efficiency of some of the various steam pipe coverings on the market. The testing plant was divided into two sections, one for coverings designed to stand on pipes carrying the higher pressure of 150 pounds per square inch, and the other for the lower pressure of 80 pounds. The size of pipe selected for the leading test was ordinary standard 2-inch steam pipe, and pipes 100 feet in length were used. Among the various coverings tested were: Johns' Asbestocel, New York Air Cell, Carey's Molded, Johns' Molded, Gast's Ambler Air Cell, Johns' Asbesto-Sponge Hair Felt, two and three ply; Asbesto-Sponge Felted Sectional, K. & M. Magnesia, Navy Brand Asbestos Fire Felt, and Watson's Imperial.

The lowest rate of condensation obtained on any of the 2-inch coverings of the 80-pound section was 13.46 pounds per hour, the highest 15.14 per hour. On the 150-pound section the lowest condensation was 10.47 pounds per hour, and the highest 14 pounds per hour, all these figures being the average rate for a period of about 7½ hours' continuous run. The test seems to have demonstrated conclusively the value of testing coverings for steam pipes.

Death of R. J. O'Crowley.

R. J. O'Crowley died at his home, 12 Lombardy street, Newark, N. J., on Thursday night, December 5, after an operation for appendicitis. Mr. O'Crowley was in the fifty-fifth year of his age and was born in Cork, Ireland. He came to the United States when he was 19 years of age and learned the plumbing trade, after which he entered into a partnership with Dennis Rutherford, succeeding to the business when Mr. Rutherford died some years ago. Mr. O'Crowley was a member of the Newark Board of Trade, the Master Plumbers' Association, the Orpheus Club and several secret societies. He married Sarah J. Rutherford, who survives him, with two sons and two daughters. He was buried from St. Patrick's Cathedral in the Cemetery of the Holy Sepulchre.

GOULD & NOWLEN, Bath, N. Y., bid \$1662 and secured the contract for remodeling the heating system in the Court House in that town.

Heating and Plumbing Notes.

THE regular quarterly meeting of the Association of Manufacturers and Jobbers in Plumbers' Supplies East of the Alleghany Mountains was held in Washington, D. C., this week. The meeting was devoted to discussing various matters relating to trade interests with a view to establishing a more satisfactory market for the coming year.

THE VANDERMAN PLUMBING & HEATING COMPANY of Willimantic, Conn., have an order for all the Valve Castings to be used in the big twin vessels under construction at the works of the Eastern Shipbuilding Company, at Groton, Conn.

C. S. MERSICK & Co., New Haven, Conn., recently conducted a comparative test of the anti-siphonic qualities of a number of different Lavatory and Sink Traps now in general use, demonstrating the high efficiency of a Trap for which the house are agents. It was found that with this Trap water could not be siphoned out below the levels of the flange, and that it was impossible for the air to get back through the pipes, as with the modifications of the common S Trap and a number of patented Traps.

THE contract for plumbing the new office building of the Union Hardware Company, at Torrington, Conn., has been let to W. H. Morrison of that place.

RICHARD SIM has sued the Allegheny Heating Company of Allegheny, Pa., for \$25,000 for the death of his wife, \$3000 for the destruction of his home and \$500 for its furnishings. The plaintiff lived on Buchanan avenue, Allegheny, and upon November 7 last, it is charged, a leaking main was responsible for the filling of the cellar with gas, which resulted in an explosion, causing the death of Mrs. Sim and destroying the plaintiff's property.

THE heating contract for a new eight-room school house at Woonsocket, R. I., has been awarded to the John F. Mulvey Plumbing & Heating Company of that city, and the contract for the plumbing to the Samuel Jackson Company.

THE contract for plumbing the new Town Hall in West Hartford, Conn., has been awarded to Hanlon & Murphy, and the heating contract to the Hartford Heating Company.

A MASTER PLUMBER of Cleveland, Ohio, has appealed to the local Board of Control for protection against the plumbing inspector, whom he charges with persecuting him. The plumber admitted, however, that on several occasions he had done work without filing plans or securing a permit.

FRANCIS BROTHERS & JELLETT, INCORPORATED, Philadelphia, Pa., bid \$2900 and secured the contract for installing a heating system at 1020 Filbert street, Philadelphia.

A LETTER from the Ideal Mfg. Company, Detroit, Mich., informs us that the suit brought against them on the charge that their Ideal Volunteer Water Closet Flushing Device was an infringement of other patents did not come before a court, as consent was given to a decree dismissing the bill of charges.

THE first calendar of the season has reached us through the courtesy of H. H. Beals, 51 Cliff street, the New York representative of the Wm. Powell Company of Cincinnati, Ohio. The date leaves show the various Valves, Oil Cup Bibs, Water Gauges, Service Cocks and the water, steam and gas iron and brass goods made by the house. These leaves have a small monthly calendar in the upper corner, while a weekly leaf gives the days and dates in large 2½-inch figures. The leaves are attached to a card showing Powell's Star Regrinding Valve in bronze against a red star on a blue ground, which has in white the hands of America, Europe, Africa and Asia pointing to the Valve. The address of Mr. Beals appears on the card in blue letters on a white ground.

THE CHARLES PARKER COMPANY, Meriden, Conn., inform the trade that they are now manufacturing the entire line of Plumbing Material formerly manufac-

tured by the Meriden Malleable Iron Company. They found by investigation that the Meriden Malleable Iron Company's general line of Legs, Brackets and many of their specialties are among the finest manufactured in this country. They are also aware that many new articles are required to freshen the line, and it is their purpose to add everything necessary to make it complete. A variety of articles will be added to the line not before made by the Meriden Malleable Iron Company. At the present time the company are at work on this new material, and hope to be able to have such articles ready for shipment early in the coming year. A catalogue of their line of goods will be ready for distribution early in 1902.

THE HAYS MFG. COMPANY, Erie, Pa., have issued an announcement, in which they say that they have rebuilt a new plant above the ruins of the former one which was wrecked by a boiler explosion on October 9. They claim to be better equipped now than ever before, having as perfect a brass foundry as can be constructed. They are out after business again, and as their territory is large it will take their traveling representative some time to convey the good news in person, lest the trade should forget then in the meanwhile they make this advance announcement. It adds, "Don't think we are out of existence, but remember we are doing business at the old stand, and solicit a continuance of your patronage."

THE ZERO VALVE & BRASS MFG. COMPANY, Buffalo, N. Y., say that for some time they have been manufacturing the Phoenix Flue Cleaner for the Hubbard Mfg. Company, and have now taken the selling agency. To persons handling this style of supplies they will send a sample with a view of obtaining their orders. They state that there are a great many Flue Cleaners on the market, a few of them being good and others bad. The Phoenix, they claim, is one of the good ones, and they recommend and guarantee it as satisfactory in every way. The company carry these goods in stock from 1½ to 4 inches, inclusive, in ¼-inch sizes, and from 4½ to 6 inches, inclusive, in ½-inch sizes.

THE HUMPHRIES MFG. COMPANY, Mansfield, Ohio, are now ready to take care of any specifications that they may receive for Pumps and Cast Iron Sinks. Since the fire, which occurred on June 7, they have been busily engaged in rebuilding the destroyed portions of their factory, and now believe they have as modern and well equipped a factory as any. Their foundry has been enlarged and rearranged, so that they can carry on the manufacture of their different lines without any confusion and without one line interfering at all with the other. The company refer to the patience and indulgence with which they have been favored by their customers, and hope to repay them by prompt filling of orders in the future.

THE OHIO BRASS & IRON MFG. COMPANY, Cleveland, manufacturers of Plumbers' Brass Goods, report that the volume of their business has increased fully 20 per cent. this year.

A NUMBER of the master plumbers of Chicago have entered suit against the city for the recovery of license fees which were paid during this year in compliance with an ordinance of the City Council. As the Supreme Court of the State subsequently declared the collection of these license fees illegal, the plumbers are now taking steps to have the payments returned.

THE citizens of Quincy, Ill., are working to secure the location in that city of a factory for the manufacture of plumbing supplies. The names of the projectors of this enterprise are not disclosed, but it appears that the citizens were asked to raise a subscription of \$30,000 toward the capital stock of the company. This sum has been secured and it is now expected that the establishment will be erected and another important industrial undertaking will be added to the list of factories located at Quincy. That city has been quite fortunate the past year in securing additional industries which will give employment to a large number of workmen.

THE HOOD MFG. COMPANY of Carthage, Mo., have bought a new building on Main street, into which they

will move their Faucet manufacturing machinery and equipment. The company have outgrown their old quarters and the new building will give them increased facilities. New machinery will be added to increase the output.

THE SMITH & ABBOTT COMPANY of Portland, Maine, are installing a steam heating plant in the Odd Fellows' Block at Rumford Falls, Maine.

New Firms and Changes.

H. L. PARSONS AND A. J. HEAD have opened a plumbing shop in the Wells Block, Prescott, Ariz.

THE plumbing and steam fitting firm of Munro & McGlynn of Whittenton, Mass., has been dissolved by the withdrawal of Mr. Munro. The business will be continued by Andrew McGlynn.

THE UNIVERSAL LIGHT & FIXTURE COMPANY have been incorporated at Huron, S. D., with a capital of \$300,000 by W. M. Smith, O. C. Smith and Philip Lawrence.

New Publication.

CONTRACT AND ESTIMATE RECORD BOOK FOR PLUMBERS. By B. H. Jessup. Pocket edition, 200 pages, arranged for 50 estimates. Size, 3½ x 8 inches (oblong). David Williams Company, publishers, 232-238 William street, New York. Flexible cloth; price, 50 cents.

Estimate books, now largely in use by plumbers, are designed to reduce the labor involved in preparing estimates on jobs and to obviate the risk of omitting items in figuring, which often results in loss to the plumber. This is an improved edition of an estimate book in size suitable to be carried in the pocket. It contains 50 complete forms for estimates, with a space at the head of each form for entering the date and the name of the person to whom the estimate is furnished. In preparing estimates, the plumber usually finds it necessary to go over a long list of items of materials. Figuring these items from memory or from memoranda is believed to be an unhandy and unreliable method, and this book, therefore, meets a well defined want in providing a means of keeping track of the cost of work and affording a systematic record. The form of estimate employed embraces a list of all material used in any ordinary house with each item in its proper classification. Parallel columns give space for entering the cost of each item, which will enable the estimator to easily add the total.

Mr. Jessup has also prepared a large sized Plumbers' Estimate Book for office use, and a Steam and Hot Water Heating Estimate Book, information of which can be obtained from the publishers.

Moved by the recent terrible accident on the Wabash Railroad, George H. Barbour of the Michigan Stove Company has written a strong letter to the *Detroit Free Press*, urging the necessity of legislation to prevent such serious accidents in the future. Mr. Barbour expresses the opinion that the first important thing for railway officials to consider is that of the safety of their passengers; secondly, their comfortable accommodation, and, thirdly, speed. He believes that the law should regulate the speed of passenger trains, so as not to allow them to exceed 10 miles an hour when passing a siding where it is expected to meet another train, instead of running, as they do now, at 60 miles an hour.

THE G. DROUVE COMPANY, Bridgeport, Conn., have taken some important contracts lately and are very busy at their plant. They are now getting out Skylights for the Pittsford-Florence Marble Company, Pittsford, Vt.; Copper Cornices for the Pierce Temporary Home in White Plains, N. Y.; Skylights and Galvanized Iron Work for the new plant of the Port Chester Bolt & Nut Company, Copper Work for the Port Chester Trust Company's new building, the new Auerbach residence in Far Rockaway and a fine residence in Lenox, Mass., for R. W. Patterson, and are finishing up the Copper Work on two hotels in Palm Beach, Fla., and a racquet court at Tuxedo Park, N. Y.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

FROST ON WINDOWS.

From W. I. S., Lynn, Mass.—In last week's *Metal Worker* I noticed how "R. C." keeps frost from forming on his show window. The method he employs is all right and works well, but his theory that the cold air enters at the bottom of the window, fills the inclosed window space and crowds out the warm air through the holes at the top of the window is not in accordance with my experience. In real cold weather there is always a current of air circulating behind a window. The warmer air in the room or window space, as it may be, naturally is near the ceiling. When this strikes the window



Frost on Windows.—“W. I. S.’s” Theory of Air Current Behind Show Window.

it is immediately chilled and drops rapidly, keeping very close to the glass until it gets to the floor. The force of this descending current of air can frequently be felt with the hand, and can be most easily and plainly observed by blowing a little smoke from a cigar near the window. The smoke will be drawn in by the strong downward current, as soon as it gets near the window, and will fall to the floor. I do not believe that boring holes at the top and bottom of a window will prevent the action of this strong air current, but that this current would suck cold air through the top holes and let some cold air escape out of the lower holes. The accompanying illustration shows my theory as to the movement of the air.

Note.—It will be interesting if other readers of *The Metal Worker* will give their ideas and experiences on this subject.

LIFT PUMPS WITH LONG SUCTION PIPES.

From T. P., Newtown, N. J.—I have read the letter of "C. R.," in *The Metal Worker* of December 7, and would state that, in my experience, if the foot valve is tight there is no occasion for a check valve between the pump and the foot valve. When the suction pipe is so long some difficulty will be found in working the pump if attempt is made to lift water 25 feet. It will be necessary, however, for the piping to be securely fastened and the pump to be firmly fixed, so that the force required to operate it will not loosen it from its fastening. The labor in the operation will be decreased as the

lift is decreased. There should be no serious difficulty, however, in getting the pump to operate at 25 feet lift if the work is carefully done and a good pump is used. It will be necessary to use a pump having a good, durable valve and cylinder.

From G. E. S., East Stroudsburg, Pa.—In reply to the inquiry of "C. R.," in *The Metal Worker* of December 7, I would say that there will be no difficulty with his pump working all right if arranged as shown in the sketch. An air chamber near the cylinder will be beneficial, as the flow of water will be more uniform to the pump and the jarring will be reduced somewhat. A 1½-inch pipe will be better for the suction pipe than 1¼-inch, as there will be less friction. A check valve near the cylinder is unnecessary, but a good foot valve should be used.

MAKING SEWER CONNECTIONS.

From P. R., Phillipsburg, N. J.—I shall be glad to secure information in reference to the methods of making sewer connections in different cities, where both terra cotta sewers and sewers built of brick are used.

Is it best to use extra heavy cast iron for connections with a sewer or is there no objection to the use of terra cotta pipe?

If terra cotta pipe is used should it be glazed, and how should the house sewer connect with the street sewer, at the ordinary level of the flow in the sewer or above it?

Should the sewer connection pitch downward at the point of connection?

How much grade should be given to the sewer from the house to the street sewer; or, rather, what is the least grade that will insure successful results?

Is there any objection to the use of the front wall trap, and how is the best way to protect its seal?

Does not the settling of the front wall of a building oftentimes interfere with the drain pipe at the point where it passes through it, and is there not some method of protecting this pipe without permitting surface water running down along the outside of the wall and into the cellar through the opening where the drain pipe passes through?

I have asked a number of questions, and I hope that those who have had experience will relate what they have found to be the best in their practice, as the information will be of special advantage to me at this time, while I feel sure that many other readers of *The Metal Worker* would be glad to have the established customs of the trade explained, with the reasons for their becoming generally used. I also know that in different sections of the country different customs prevail, and I feel certain that *The Metal Worker* will welcome a presentation of such sketches and explanations as men who are interested in substantial sanitary work can furnish.

PAINT FOR GALVANIZED IRON.

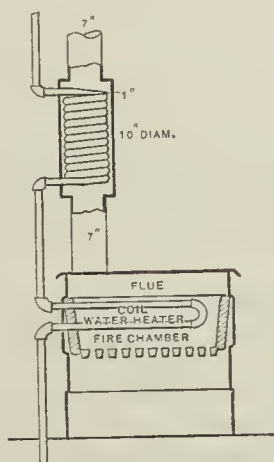
From B. F. K., Desplaines, Ill.—In answer to the inquiry of "B. B. C.," in *The Metal Worker* of November 30, I would suggest that he will find the following method of treating galvanized iron surfaces before painting satisfactory: They should first be cleaned or prepared with the following solution: Dissolve 2 ounces of chloride of copper, 2 ounces of nitrate of copper and 2 ounces of sal ammoniac in 1 gallon of water, and to this solution add 2 fluid ounces of hydrochloric acid. Cover the surface of the galvanized iron with the solution and it will turn to a black color, which, on standing and drying over night, will turn a light gray color. If the surface is then primed with a coating of red lead, thinned with equal parts of raw oil and turpentine, he can rest assured that paint will hold to it like grim death.

From W. N., New York.—Replying to the inquiry of "B. B. C.," in *The Metal Worker* of November 30, for paint that will stick to galvanized iron, I would advise him to allow the galvanized iron to be exposed to the weather about one week. Then give it a ground coat of metallic paint mixed in pure boiled linseed oil. That this will adhere to the galvanized iron I know from experience. When perfectly dry put on any desired color.

UTILIZING WASTE HEAT.

From Northern Plumber, Vermont.—I have read the inquiry of "Southern Plumber," in *The Metal Worker* of December 7, and congratulate my Southern contemporary on his desire to economize. I have thought that the disposition to economy and thrift was patent in my neighborhood, but am glad to see that the New England influence is extending. The problem he presents is one on which I doubt if there is much information that can be used as a guide. I have heated radiators from the regular water backs and boilers connected with kitchen ranges, also from special pipe coils, and have used the smoke pipe of hot air furnaces for heating water to be circulated through radiators placed in rooms which were subject to the influence of strong winds.

The proposition which he presents is somewhat different from any of these, and the success depends largely on the manner in which the range is run. If it is run so that the draft is not checked by removing the covers and allowing cool air to be drawn up the chimney, success may attend such an experiment. If the covers are not off the range most of the time and the draft is kept open the gases which rise from the fire will be hot and their heat will be absorbed by the water in the coil, and



Utilizing Waste Heat.

this can be circulated through the radiator. A much larger pipe coil, however, will be required in connection with the smoke pipe from a range than would be necessary with the pipe from a hot air furnace. It is doubtful even then if the water would be raised to as high a temperature as is usual in hot water heating systems. In consequence I would provide 1 foot of surface in the radiator in each of the bathrooms for each 25 cubic feet of space it contains. This would make 48 feet of surface in each of the rooms.

Possibly some benefit would attend the use of a larger radiator in the bathroom on the first floor, inasmuch as the water would be cooled in passing through the upper radiator. Assuming that 100 feet of radiation will be used in the two rooms and piping, a pipe coil must be made that would be large enough to heat the water they contain. It is doubtful if 1 square foot of surface in such a pipe coil will heat the water to a sufficiently high temperature if it is expected to take care of more than 10 feet of surface. By dividing the 100 square feet of radiating surface by 10 it will be found that the coil in the smoke pipe must expose 10 square feet of surface. If it is made of 1-inch pipe it will require about 30 lineal feet. The coil should be made very open, so that the hot gases can pass around all sides of the heating coil. It would be better if the section of pipe in which this coil is to be placed was made at least 10 inches in diameter, having a 7-inch pipe collar at the top and bottom. This will enable the coil to be made 7 inches in diameter on the inside.

Now, my Southern friend states that the pipe coil must be placed in the second joint of the pipe above the stove. This is not the best place for it. It should be in the first joint by all means, both for good heating and to insure a good circulation through the radiators. If located so high it will seriously impede the circulation of the water through the two radiators, and may inter-

fere with the circulation to such an extent as to defeat the object of the whole outfit. I would suggest supplementing the heating coil in the pipe by another in the fire. If two holes are drilled in the range a loop of the pipe can run through the lower hole into the fire chamber, across the long side, and then, with a close return bend, run back again out of the upper hole before it connects with the heater in the smoke pipe. This can be done without disadvantage to the general operation of the range, and it will add materially to the efficiency of the heating arrangement proposed. It will only be necessary to cut the fire brick down a few inches to allow this pipe coil in the fire chamber to lie against the oven and to have the fire lie against it, so that however the range may be operated some heat will be transmitted to the water heating system through the loop of pipe lying in direct contact with the fire.

PREPARING GALVANIZED IRON FOR PAINTING.

From J. & D., Indianapolis, Ind.—We found in one of the back numbers of *The Metal Worker* and tested a very useful receipt for coating galvanized iron to prevent the paint upon it from peeling off. We now have occasion to paint a house which has been covered all over with galvanized iron and know that the solution we used was satisfactory. We wish to use it again, but cannot find it, and shall be glad to be informed in what issue it appeared.

Note.—Our correspondent probably refers to the solution given in *The Metal Worker* of October 21, 1899, which is given in this issue from another correspondent who has tried it. Another article on the same subject was presented in *The Metal Worker* of November 25, 1899. Articles in reference to painting sheet zinc were given in *The Metal Worker* of March 11, 1899, and April 1, 1899. We shall be glad to have our correspondents report the results after they have painted this galvanized iron sheathed building, and sufficient time has elapsed to test the holding powers of the paint.

WANTS SUBSTITUTE FOR EARTH CLOSET.

From G. J. D., Minneapolis, Minn.—I shall be pleased to learn of a convenient portable and sanitary substitute for the city water closet for use in the country. I know of nothing better now than the earth closet, which is not satisfactory. If any of the readers of *The Metal Worker* have knowledge of such a device as I desire I shall be glad to learn of it through its columns.

REPAIRS FOR MATCHLESS STOVES.

From B. B. Christie, Dayton, Ohio.—I should like to learn where I can secure repairs for the Matchless stoves and ranges, that were formerly made by Duncan & Co. at Sharon, Pa. I have addressed letters to Duncan & Co. at Sharon, Pa., and the letters have been returned.

WHAT IS THE BEST ROOF COVERING FOR ROUNDHOUSES?

From W. M., Suffolk, Va.—Will some of the readers of *The Metal Worker* give their views as to how to construct the most lasting roof for a roundhouse? I should like to know whether iron or wood framing is best to withstand the sulphurous gases, and whether metal, slate or felt roofing is most serviceable?

GALVANIZED IRON ROOFING ON THE SEA COAST.

From Roofer, Atlantic Sea Coast.—We are called upon to place the roof on a large factory building which is located on the Atlantic sea coast, where the salt atmosphere is looked upon as especially destructive to iron. Owing to the size of the building a roof of cement or slate would necessitate a very expensive framing and our customer desires to learn of the durability of galvanized iron roofing under the circumstances. We would be glad to have *The Metal Worker* or its readers give their views on the subject.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and weak, ruling about $\frac{1}{4}$ c. lower.
Copper is unsettled, and retail prices are inclined to soften.
Pig Lead is unchanged.
Spelter is active, and rules $\frac{1}{8}$ c. higher.
Antimony is unchanged.
Nickel continues firm and active.
Aluminum is active at former prices.
Tin Plates are quiet and unchanged.
Sheets are still scarce and in heavy demand, with supplies below demand.
Sheet Copper is firm in price, with fair current demand.
Pig Iron is strong and active; prices on Southern Irons tending upward.
Hardware is moving in large volume, and prices are steady.
Plumbers' Supplies are in good demand for the season, with strength in prices for all lines.
Scrap, Brass and Copper are about $\frac{1}{2}$ c. lower.
Tin Cans have been reduced in price.
Wrought Iron Pipe prices are firm, with continued good demand.
Screws are somewhat irregular in price.
Wire Nails are in moderate demand, with prices showing some irregularity.
Cut Nails are moving in fair volume, with prices unchanged.
Wire prices are uneven.
Window Glass is dull, and lower prices are looked for.
Linseed Oil market is unsettled.
Spirits Turpentine is firm and a shade higher.

THE PIG IRON MARKET.

NEW YORK.—The market has been quiet and firm, no large transactions being noted in this district. We quote: No. 1, \$16.35 to \$17.50; No. 2 X, \$15.65 to \$16; No. 2 Plain, \$15.15 to \$16; Tennessee and Alabama brands, No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—The general demand for Pig Iron is very good, and special causes are contributing to an unusually heavy trade in certain classes of Iron. A sharp demand is especially noted for Lake Superior Charcoal, which has been selling up to \$19, and even \$19.50. Numerous inquiries are in the market, several being for quantities of Foundry Iron ranging from 1000 to 3000 tons. The local furnaces are quoting cautiously, and will continue to do so until the question of a sufficient fuel supply is satisfactorily settled. Many orders for deliveries earlier than April or May are being passed, on account of the fuel uncertainty. The Southern furnace companies, being in better position with regard to fuel, are making the most of the opportunities now prevailing. An advance of 20c. per ton is announced on the freight rate on Southern Iron by the railroad companies north of the Ohio River, to go into effect January 1. We quote as follows:

Lake Superior Charcoal.....	\$18.00 to \$19.00
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	17.60 to 17.85
Southern Silvery, according to Silicon.	16.15 to 16.40
Southern Coke, No. 1.....	15.65 to 16.15
Southern Coke, No. 2.....	15.15 to 15.65
Southern Coke, No. 3.....	14.65 to 15.15
Southern Coke, No. 1 Soft.....	15.65 to 16.15
Southern Coke, No. 2 Soft.....	15.15 to 15.65

PHILADELPHIA.—The heavy recent purchases give the market at present a very tame appearance as compared with its recent condition. Prices are firmer, however, and sales during the past few days average a full 25c. per ton advance on the prices ruling the previous week. Most of the recent business is for immediate shipment. Prices are rather hard to quote with exactness. When deliveries are easy, both as to time and distance, the buyer can do better than the one who has to pay for a long haul, but the range for Philadelphia and nearby points will be about as follows: No. 1 X Foundry, \$16.25 to \$16.50; No. 2 X Foundry, \$15.75 to \$16.25; No. 2 Plain, \$15.35 to \$15.65.

PITTSBURGH.—The United States Steel Corporation have bought something over 20,000 tons of Bessemer Iron from the Furnace Association at \$15.25, at Valley furnace. This, however, is absolutely the minimum of the market, as sales of Bessemer Iron are being made at \$15.75 and up to \$16, at furnace. There is a scarcity of Bessemer for prompt shipment, and sellers can get almost any price they ask. Foundry Iron is also active and prices are higher, No. 2, for prompt shipment, having sold at \$16.25, Pittsburgh. We quote No. 1 Foundry at \$16.50 to \$16.75; No. 2 at \$16 to \$16.25, f.o.b. Pittsburgh. Heavy purchases of Foundry Iron have been made for delivery running all through next year, and some of the furnaces that produce Foundry grades report that they are pretty well sold up for the first half of the year.

CINCINNATI.—With no material change in conditions the week closes on a strong and regular market. Trade is somewhat quiet, and not very many orders for over 1000 tons have been recorded, but there is a good run of minor transactions, making a fair tonnage in the aggregate. If there was any standard Iron for immediate delivery it would be taken at once in considerable quantities, but the market is barren in this line; indeed, Iron for next quarter's delivery is getting quite scarce, with a good strong undertone. Holiday conditions will likely be the order of the market for the next few weeks. Higher prices are not immediately expected. Northern Irons are advancing a little ahead of Southern stock. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.25
Southern Coke, No. 3.....	to 13.75
Southern Coke, No. 4.....	to 13.25
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.25
Southern Coke, Gray Forge.....	to 13.25
Southern Coke, Mottled.....	to 13.25
Ohio Silvery, No. 1.....	\$15.60 to 16.10
Ohio Silvery, No. 2.....	15.10 to 15.60
Lake Superior Coke, No. 1.....	to 16.60
Lake Superior Coke, No. 2.....	to 16.10
Lake Superior Coke, No. 3.....	to 15.60

ST. LOUIS.—While an unusually good volume of inquiry is noted in the Pig Iron market, the volume of actual sales is considerably lighter, but this condition is the usual one at this period of the year. The market as a whole presents a very strong appearance. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.50 to \$15.75
Southern, No. 2 Foundry.....	14.75 to 15.00
Southern, No. 3 Foundry.....	14.25 to 14.50
Southern, No. 4 Foundry.....	13.75 to 14.00
No. 1 Soft.....	15.25 to 15.50
No. 2 Soft.....	14.75 to 15.25

METAL MARKET.

NEW YORK, December 13, 1901

Pig Tin.—Business throughout the week has been very dull. The market has been in the buyer's favor, but consumers show little inclination to do business. After the rapid declines of last week a slight reaction set in early in the present week, to be followed by another decline, the market closing weak and dull. Jobbers' prices for small lots of Straits Pig are a trifle be-

low those ruling a week ago, 26c. to 26½c. being about the present average range.

Copper.—That certain large consumers and the principal producers are most anxious to bring about a termination of the present demoralized condition is very evident. Producers want to get out of the situation as comfortably as possible, and the consumers want to see a steady, stable market. There are, as yet, however, no signs of any settlement between these parties. Production is going right on and consumption is only according to the actual needs of purchasers. The slump in Amalgamated Copper stocks in Wall street has emphasized the unsettled feeling among the trade, who are purchasing metal very sparingly, in the anticipation of a possible early break in prices of Copper. With the natural dullness of the market incidental to the last few weeks of the year, the strained conditions existing conspire to limit the business in Copper very materially. Retail prices are slightly lower, Lake Ingot in small lots being quoted at 17c. to 17½c. per lb.

Sheet Copper.—The current consumptive demand for Sheet Copper continues to be of good proportions, but is not so large as it has been heretofore. The shaky condition of the market for the raw material tends to make consumers of Sheet Copper disinclined to purchase anything beyond the limits of their actual current requirements. Nevertheless, a goodly amount of material is going into consumption and prices show no signs of weakness. Small lots of Sheet Copper from store are quoted on the basis of 21c. per lb.

Pig Lead.—Notwithstanding the announcement that an agreement had been arrived at between the American Smelting & Refining Company and the miners, it is stated in the trade, on good authority, that the miners have not agreed to curtail production. It is held that while the conference may be over, an agreement has not been reached, and especially an agreement that will tend to better the situation. The market conditions remain unchanged, transactions being on a limited scale, and prices without variation. American Plg in small lots is quoted at 4.55c. to 4.60c. per lb. St. Louis advices report the same order of conditions ruling in the Pig Lead market in that center, with no change in prices.

Spelter.—Spelter for spot delivery is considerably stronger here, and the volume of business is said to be good. Jobbers prices for good Western brands in small lots have been advanced about ½c. per lb. to 4½c. to 4¾. St. Louis advices report a quieter feeling in the Spelter market at that point, with prices having reacted slightly on the lighter demand, but holding very firm around the present level.

Sheet Zinc.—The usual demand for Sheet Zinc is noted by jobbers who quote 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7¼c.

Antimony.—No change has taken place in this metal. Cookson's in small parcels is quoted at 10½c. to 11c., and Hallett's at 8½c. to 9c. per lb.

Nickel.—Is unchanged, prices continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—An active demand for Aluminum continues, and prices remain at 37c. per lb. for small lots of No. 1 Ingot guaranteed 99 per cent. pure 35c. for 100-lb. lots.

Tin Plates.—Conditions in the Tin Plate market show no change from those prevailing for the past few weeks. The approach of the end of the year is always a dull season in this trade, and the present is no exception to the rule. The demand is of quite moderate proportions, and consists mainly of small orders for present use. Deliveries are coming in with rather more freedom, but stocks of the more popular sizes of Plates are still light. Prices hold at about last week's level. American Bessemer Coke Plates, I C, 14 x 20, are selling in small lots, in New York and corresponding points, at about \$5.25 to \$5.75 per box.

Sheets.—The demand for Sheets continues very active, and deliveries are still considerably behind hand. A good many new contracts are being placed, in some cases for deliveries running through the first half of

next year. Some of the new Sheet capacity is now coming into the market, and a few of the new mills are going after orders very aggressively. Prices continue steady in consequence of the short supply of Sheets, No. 27 One Pass Cold Rolled Soft Steel Sheets being quoted by jobbers at 4c. to 4.05c., and Galvanized Sheets at 65 to 65½ per cent. off the list.

Chicago advices are as follows: The supply of Sheets has not yet been restored to its normal condition. The leading Sheet manufacturers have by no means caught up with their back orders, and the independent mills starting up hardly get into the market until they are filled with orders taking their output for 60 days or more. Large consumers are eagerly seeking a better supply and are satisfied to take whatever they can get. The jobbing trade is still suffering from a shortage of Wood's Smooth Sheets and Planished Iron, for which a special demand always exists. Mill shipments of No. 27 Black Sheets are quoted at 3.15c. to 3.40c., Chicago, and small lots from stock are selling at 3.50c. to 3.70c. Galvanized is in somewhat better supply and small lots are selling at 70 to 70 and 2½.

Old Metals.—The conditions in the Copper market have created a weak tendency in the market for Scrap Copper and Brass, which are quoted lower. Otherwise there has been no change in the market for Old Metals. Demand is of moderate proportions. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 14¼c.
Light and Tinned Copper.....	per lb. 12¼c.
Heavy Brass.....	per lb. 9 c.
Light Brass.....	per lb. 7¼c.
Lead.....	per lb. 4 c.
Tea Lead.....	per lb. 3½c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 17½c.
No. 2 Pewter.....	per lb. 8½c.
Tin Plate Scrap, per gross ton.....	\$6.00 to \$6.50
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	7.75 to 8.00
Burnt Iron, per gross ton.....	5.00 to 5.50

CHICAGO REPORT.

Scrap Iron and Steel.—Business is quiet, as large consumers are endeavoring to force prices lower, especially on material suitable for use by rolling mills. We quote dealers' buying prices in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	8.00 to 8.25
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	... to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	... to 7.00
Old Boilers—whole (Iron).....	6.50 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	9.00 to 10.00
Old Gas Pipe and Boiler Tubes.....	10.50 to 11.50
Cast Borings.....	4.50 to 5.00
Turnings.....	9.50 to 10.00
Horseshoes.....	... to 13.00

Old Metals.—The fear of lower prices on Ingot Copper is causing holders of Old Metals to try to dispose of them, and they are making concessions in prices. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	13¾c.
Copper Bottoms.....	12¾c.
Copper Clips.....	13½c.
Red Brass.....	13 c.
Yellow Brass.....	9¼c.
Red Brass Borings.....	11 c.
Yellow Brass Borings.....	8 c.
Light Brass.....	7¼c.
Pipe Lead.....	4 c.
Tea Lead.....	3¾c.
Zinc.....	3 c.
Tin Foil.....	22½c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	15 c.

Old Rubber.—The demand from consumers is light and stocks are increasing. We quote as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7¼c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	6¾c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	5¼c.

Rags.—Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lb. in any quantity.

Anthracite Coal.—All kinds of Coal are in strong demand, while the supply is short, owing to the scarcity of cars. Prices are unchanged, as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

There is a falling off in the volume of business, as usual at this time. Current shipments are for the most part of holiday and winter goods, which are hurried along to meet the immediate requirements of merchants. In these lines trade is active and indicates in its volume and the character of the goods moving an enterprising and prosperous condition among the trade at large. There is a good deal of business being done by the jobbers throughout the country in supplying the smaller trade, and they are also buying for next year's requirements. The orders which are thus coming in to manufacturers are very satisfactory, showing confidence on the part of merchants in the stability of prices and in the continuance of existing prosperous conditions. Comparatively few manufacturers have full stocks of goods on hand, nearly all of them welcoming something of a relaxing in the demand which will permit them to get in shape for next year. There is a better supply of some lines, especially of heavy goods, such as Pipe, Sheets, Plates, &c. Orders for season goods are being booked rapidly and many anticipate something of a scarcity in some important lines. Prices generally are steady and firm. Steel Goods and Screws are in an unsatisfactory condition and low prices are ruling. Scythes seem to have settled to their level. Wire Nails and Wire are regarded with suspicion, and the trade, unless covered by some kind of special understanding with the manufacturers, are buying very cautiously. The general situation is regarded as very satisfactory and the outlook for business as excellent. The year draws to a close with conditions that should contribute to the enjoyment of the holiday season.

NOTES ON PRICES.

Wrought Iron Pipe.—Although there has been no change in the price of Wrought Iron Pipe at the mills, there is a feeling that the advent of several new and independent mills will bring about a change in the market. The jobbing trade seem to be of the opinion that no change will occur much before the beginning of March or April of next year. It is argued that the output of the National Tube Company and of the independent mills now in operation is sold up to the date mentioned, and the opening up of a few more mills will do no more than relieve the market of the present stringency of Pipe. The market in the metropolitan district is in fair shape; prices are stable and the demand is in good volume. No complaint is heard of cutting in prices among the jobbers. Probably this is due to the fact that the margin of profit is too small to admit of cutting, and, judging from the way the majority of the trade speak, the demand is very satisfactory. It is to be expected, however, that this being very close to the end of the year a number of jobbers will make an earnest effort to reduce the stock now on hand to a minimum before January 1.

Gasoline Fire Pots and Torches.—The Clayton & Lambert Mfg. Company, Detroit, Mich., as recently reported in these columns, have issued new prices on their Gasoline Fire Pots, or, as they are more generally known, Furnaces, and Torches. It is seldom that a change is made in the price of these goods, consequently the trade will be interested in the new lists, which are as follows:

Number.	Fire Pots.	Catalogue or selling price of each.
1.....		\$6.00
5.....		4.50

6.....	4.00
10.....	3.00
20.....	3.25
2.....	20.00
3.....	25.00
4.....	30.00
7.....	6.00
15.....	8.00

Torches.

Number.	Catalogue price, each.	
1.....	Polished brass, \$3.00	Nickel plated, \$3.25
2.....	Polished brass, 2.50	Nickel plated, 2.75
3.....	Polished brass, 2.00	Nickel plated, 2.25
4.....	Polished brass, 2.00	Nickel plated, 2.25
5.....	Polished brass, 3.00	Nickel plated, 3.25
6.....	Polished brass, 3.00	Nickel plated, 3.25
7.....	Polished brass, 2.25	Nickel plated, 2.50
8.....	Polished brass, 2.00	Nickel plated, 2.25
9.....	Polished brass, 2.50	Nickel plated, 2.75
10.....	Polished brass, 1.00	Nickel plated, 1.10
11.....		Nickel plated, .75
12.....		Nickel plated, .75
13.....		Nickel plated, .75
14.....	Polished brass, 1.00	Nickel plated, 1.10
15.....	Polished brass, 2.25	Nickel plated, 2.50
16.....	Polished brass, 2.25	Nickel plated, 2.50
17.....	Polished brass, 2.50	Nickel plated, 2.75
18.....	Polished brass, 2.00	Nickel plated, 2.25
19.....	Polished brass, 2.25	Nickel plated, 2.50
20.....	Plain, 1.50	
21.....		Nickel plated, .50
22.....	Polished brass, .75	Nickel plated, .85
23.....	Polished brass, .75	Nickel plated, .85
24.....	Polished brass, 2.00	Nickel plated, 2.25
25.....	Polished brass, 2.25	Nickel plated, 2.50
26.....	Polished brass, 2.25	Nickel plated, 2.50
27.....	Polished brass, 2.00	Nickel plated, 2.25
28.....	Polished brass, 2.00	Nickel plated, 2.25
29.....	Polished brass, 2.00	Nickel plated, 2.25
30.....	Polished brass, 2.25	Nickel plated, 2.50

Screws.—The market on Screws is in a somewhat unsatisfactory condition, and prices are irregular. Both 87½ per cent. and 90 per cent. are used as base discounts by the manufacturers, but extras are given freely according to the quantity, desirability of order, standing of the customer, &c. There does not appear to be any immediate prospect of an agreement among the manufacturers which will have the effect of advancing prices or of controlling the market.

Tin Cans.—The recent action of the American Can Company in reducing the price of Tin Cans in order to shut off outside competition has been followed by the independent Can makers, practically all of whom have also marked down their price in correspondence with the reduction made by the combination.

Wire Nails.—Some irregularity in the volume of demand, which fluctuates from day to day, is noted in the Wire Nail market. This, however, does not affect the aggregate quantity of Wire Nails going into consumption. Small lots from store are quoted at \$2.35 to \$2.40 per keg.

Cut Nails.—The demand for Cut Nails is confined to moderate proportions, the amount of business being about normal for the season. Small lots from store are quoted at \$2.25 per keg.

Wire.—Former conditions rule in the Plain Wire market. There is considerable unevenness in prices, and in some cases considerable cutting is noted. Small lots of Plain Wire, New York, are quoted at about 2.55 cents, and Galvanized at 2.95 cents.

Window Glass.—The trade is quiet, and lower prices would not be surprising after the first of the year. Reports indicate that the Window Glass manufacturers outside the combine show little disposition to come to an agreement to maintain prices.

Linseed Oil.—The local Linseed Oil market is somewhat unsettled by resales of low priced Oil, which is being offered to the trade at a considerable reduction from ruling prices for Raw. This Oil was contracted for some time ago at low figures. The advance of Flax Seed in the West has had a stiffening effect upon the market generally. Spot business is light, and the uncertainty of the future of the market has deterred buyers from placing contract orders. City Raw Oil in small lots is quoted at 56 to 57 cents per gallon, Boiled Oil being 2 cents advance on Raw.

Spirits Turpentine.—During the early part of the week consumers came into the local market and purchased a quantity of Turpentine. Southern advices report firmness at that point, with a large demand. The market here is strong, moderate sized lots from store being quoted at 39 to 39½ cents per gallon.

TRADE NOTES.

THE ARC LAMP COMPANY of New Jersey, with principal office at 679 Broad street, Newark, N. J., have been incorporated with a capital stock of \$10,000 to manufacture Oil Lamps, &c. The incorporators are: John Dougherty, Allen B. Feehan and Horace L. Smith.

It is said that the new plant of the Columbian Enameling & Stamping Company at Terre Haute, Ind., is regarded as so absolutely fire proof that no insurance will be carried on any of the buildings, except the warehouses and their contents.

THE directors of the Illinois Pure Aluminum Company of Lemont, Ill., have decided to spend \$50,000 during the coming year in improvements in their plant. The company expect to add 15,000 or 20,000 square feet of floor space and to install a number of new machines. This extension is made necessary by the increasing business of the concern.

THE MESTA MACHINE COMPANY, Lewis Block, Pittsburgh, have received an order from the La Belle Iron Works, Steubenville, Ohio, for a Mesta Patent Pickling Machine, to pickle Pipe up to 22 feet in length, and a large Billet Shear to cut up to 4 x 30 inch sections on hot steel. The Shear will weigh about 125 tons and will be driven by an engine.

THE MANHATTAN BRASS COMPANY, 362-368 Avenue A, New York City, suffered a \$10,000 loss by fire December 5.

ADOLPH LEWISOHN has retired from the firm of Lewisoohn Brothers of New York.

THE December issue of *Graphite*, published by the Joseph Dixon Crucible Company, Jersey City, N. J., contains much interesting information relative to the uses to which Graphite is put, and gives a complete list of the numerous productions of the company.

THE directors of the National Enameling & Stamping Company, New York, have declared a dividend of 4 per cent. on the common stock, payable at the rate of 1 per cent. quarterly. The directors also decided to anticipate the redemption bonds of the company, amounting to \$250,000, which mature on September 1, 1902, redeeming them at par with interest.

YOUNG BROTHERS, 320 to 326 Atwater street, Detroit, Mich., will erect during the winter a two-story brick factory building covering a ground space of 95 by 100 feet, and to cost about \$8000. The power is to be a gas engine. The firm do a general jobbing business in Copper and Sheet Iron work, manufacturing Copper Stills, Kettles, Percolators, and special apparatus for manufacturing pharmacists, chemists and for laboratories; also Copper Steam Pipes, Coils, &c., for factories, steamboats, &c. They further manufacture Sheet Steel Smoke Stacks, Breechings, Tanks, and all kinds of special work in that line, and make a specialty of the Cyclone Exhaust Head and Young's Improved Automatic Water Still. It is owing to the increasing sales of these goods that they are enlarging their plant to about six times the size of their present factory. They are equipping the engines of some of the largest plants in the country with the Cyclone Exhaust Head and are running overtime to keep up with orders. Their Water Stills are used in hotels, hospitals, schools and laboratories and are found especially desirable for electric storage battery plants, where nothing but pure water can be used.

THE AMERICAN SHEET STEEL COMPANY have removed their Chicago offices from the eleventh floor of the Marquette Building to a larger suite of rooms on the tenth floor of the same building. The company's Chicago business is not only large, but is constantly increasing, and it was found necessary to secure additional space to accommodate a greater office force.

THE recent addition of \$1,000,000 to the capital stock of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, has all been paid in, giving the concern a paid up capital of \$2,000,000. Plans are being

drawn for an Open Hearth Steel plant, work on which will start in a short time.

THE IMPERIAL EXPANDING METAL COMPANY, with principal office at 419 Market street, Camden, N. J., have been incorporated, with a capital stock of \$250,000, to manufacture Expanded Metal, Fire Proofing Materials, &c. Augustus M. Eddy, Charles W. Hills, Anna B. Hills and Louis J. Delson are the incorporators.

In the experiments in electric traction on the Prussian military lines, says the Berlin correspondent of the *London Times*, a speed of 99½ miles an hour has been attained, the force employed being 10,000 volts. It is said that if the lines were strengthened this rate of speed would be quite practicable.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED DECEMBER 13, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.			
Small lots.....	lb.	37¢	
100-lb lots.....	lb.	35¢	
Aluminum Sheet, B. & S. gauge.			
In lots of 50 lbs or more.			
Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in.	24-in.	30-in.
	lb.	lb.	lb.
Nos. 13 to 19.....	\$0.42	\$0.44	\$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.48	.50	.53
" 25.....	.47	.51	.54
" 26.....	.48	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.62
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—

Cookson.....	lb.	10¢@11¢
Ballet's.....	lb.	8¢@9¢
U.S.....	lb.	8¢@9¢

Brass, Roll and Sheet..15¢@20¢

Conductors—

Corrugated.

Round or Square.—

Galvanized 1/2 or more, N'st'd.....	70¢@75¢
" Not Nested.....	70¢@75¢
" Plain Round, 1/2 or more.....	70¢@75¢
Nested.....	70¢@75¢
Galvanized, Plain Round, Not Nested.....	70¢@75¢

Spiral Riveted.

Galvanized.....	40¢
See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Like Ingot.....	17¢@17 1/2¢
Casting.....	16 1/2¢@17¢
Sheet and Bolt.....	21¢ per lb basis
Cold Rolled Sheets.....	22¢ per lb basis
Cold Rolled and Polished Sheets.....	23¢ basis
Polished Sheets.....	24¢ basis
Bottoms, Plts and Flats.....	25¢ basis

Eave Trough, Galvanized

Territory.....	L. C. L.
Eastern.....	75¢@10¢
Central.....	75¢@7 1/2¢
Southern.....	70¢@12 1/2¢
S. Western.....	70¢@10¢
Terms, 2% for cash.	

Eave Trough Mitres—

Lap or Slip Joint.....11st, 25¢

Elbows—Plain Adjustable—

Eastern List.

Tin.....	30%
Galvanized.....	30%
Perfect Elbows.....	40%

Stove Pipe—

Four-Piece

No. 1.....	4 1/2	5 1/2	6-in.
No. 2.....	.80	.85	1.00
No. 3.....	.65	.70	.85
No. 4.....	.60	.65	.80

Elbows and Shoes—

Galvanized.....60%

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R., R. G.	
Soft Steel. Cleaned.	
Nos. 14 to 16.....	3.75¢
Nos. 18 to 21.....	3.75¢
Nos. 22 to 24.....	3.85¢
Nos. 25 and 26.....	3.95¢
No. 27.....	4.05¢
No. 28.....	4.15¢

Russia, Planished, &c.

Genuine Russia, accord-	ing to assortment.....	11¢@14¢
Do, Stained.....		6¢@10 1/2¢
Patent Planished.....	11¢ A, 12¢ B, 11¢ net	

Galvanized.

Nos. 10 to 16.....	12¢
Nos. 17 to 21.....	13¢
Nos. 22 to 24.....	14¢
Nos. 25 to 26.....	15¢
No. 27.....	16¢
No. 28.....	17¢
No. 29.....	19¢
No. 30.....	21¢
36 in. 1¢ & D higher.	

65 @ 67 1/2¢ off

Lead—

American Pig.....	4.62¢@4.75¢
Bar.....	5 1/2¢@5 1/4¢
Pipe.....	6 1/2¢
Tin Lined Pipe.....	12 1/2¢
Block Tin Pipe.....	37¢
Sheet Lead, full rolls.....	7 1/2¢
Sheet Lead, cut.....	7 1/2¢
Old Lead in exchange, 1¢ per lb.	

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb.....	60¢@65¢
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Paints, Oils, &c.—

Leads—

Lead, American White, in Oil;	
Lots of 500 lb or over.....	6 1/2¢
Lots less than 500 lb.....	7¢
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	1/2¢
Lead, White, in oil, 13 1/2 lb tin	
pails, add to keg price.....	1¢
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	1 1/2¢
Lead, White, Dry in bbls.....	5 1/2¢
Lead, Red, bbls, 1/2 bbls. and kegs;	
Lots 500 lb or over.....	6¢
Lots less than 500 lb.....	6 1/2¢

Oils—

Linseed, City, raw.....	56¢@57¢
Linseed, City, boiled.....	58¢@59¢
Linseed State and West'n, raw.....	56¢@57¢

Spirits Turpentine—

In Southern bbls.....	38¢@39 1/2¢
In machine bbls.....	39¢@39 1/2¢

Putty—

In bulk.....	\$1.25
In bladders.....	2.25
In cans 12 lb to 25 lb.....	2.25
In cans 1 lb to 5 lb.....	3.25

Petroleum Products—

In Barrels (Barrel Inclosed)

Stove Gasoline.....	12 1/2¢@13¢
Kerosene.....	13¢@13 1/2¢

Pipe, Drain—

See Conductors.

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.....	60¢@10¢@60¢@10¢@5¢
White Japanned.....	60¢@10¢@60¢@10¢@5¢
Nickel Plated.....	60¢@10¢@60¢@10¢@5¢
Bronze Finishes in Imitation of Gold,	
Silver, Copper or Bronze.....	
Electroplated in Brass, Bronze or	
Copper.....	60¢@10¢@60¢@10¢@5¢
White Porcelain.....	60¢
Solid Brass and Bronze Metal.....	50¢

Roofing Material—

1 Ply Tarred Paper.....	ton \$28.00@28.00
2 Ply Tarred Paper.....	roll, 108 sq. ft.
	45¢@50¢
3 Ply Tarred Paper.....	roll, 108 sq. ft.
	65¢@75¢
Slaters Felt.....	roll 500 sq. ft., 50¢@60¢
Roofing Pitch.....	bbl. \$2.35

Rosin—

Common and Good—Strained.	
Rosin, C. & D.....	bbl. \$1.50 @ \$1.55
Rosin, E. & F.....	bbl. 1.00 @ 1.65
Rosin, G. & H.....	bbl. 1.70 @ 1.75
Rosin, I. & K.....	bbl. 1.80 @ 2.40
Rosin, M. & N.....	bbl. 2.90 @ 3.50

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

According to size.	
Pennsylvania:	
Best Bangor, per sq.....	\$3.25@4.50
No. 1 Bangor Ribbon, per sq.....	3.00@3.50
Pen Argyle, per sq.....	3.00@3.75
Peach Bottom, per sq.....	4.85@5.60
No. 1 Boys, per sq.....	3.35@3.55
No. 1 Chapman Keystone.....	
per sq.....	3.25@4.25
Vermont:	
Sea Green, per sq.....	\$2.00@3.15
Purple, per sq.....	3.75@4.25
Unfading Green, per sq.....	3.25@4.50
Red, per sq.....	0.50@1.00

Maine:

Brownville, Unfading Black:	
No. 1 quality.....	\$5.25@7.50
No. 2 quality.....	\$4.25@6.00

Solder—

1/2 lb guaranteed.....	17 1/2¢@18¢
No. 1.....	15 1/2¢@16 1/2¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound.	
Smaller	
Concentrated Flux.....	Barrels 4c
Eureka Flux:	
Triple Strength.....	3c
Extra Concentrated.....	4c
Crystal.....	7c
Gedney's Fluid.....	2c
Lennox Fluid.....	2c
Perfection Flux.....	3c
Yager's Salts, 1 lb. bottles.....	each, 50¢
5 lb. bottles, per lb.....	45¢

Soldering Coppers—

Per lb.....22¢@24¢

Spelter—

Western Spelter.....45¢@49¢

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, per lb.....	26 1/2¢@27¢
Straits, pigs, per lb.....	26 1/2¢@26 3/4¢
Straits, in bars, per lb.....	27 1/2¢@27 3/4¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:	
IC, 14 x 20.....	\$7.50
IX, 14 x 20.....	9.00
IXX, 14 x 20.....	10.25
IXXX, 14 x 20.....	11.50
IXXXX, 14 x 20.....	12.75

Melyn Grade:

IC, 14 x 20.....	7.00
IX, 14 x 20.....	8.50
IXX, 14 x 20.....	9.75
IXXX, 14 x 20.....	11.00
IXXXX, 14 x 20.....	12.25

Allaway Grade:

IC, 14 x 20.....	8.50
IX, 14 x 20.....	7.60
IXX, 14 x 20.....	8.70
IXXX, 14 x 20.....	9.80
IXXXX, 14 x 20.....	10.90

Coke Plates, Bright—

Bessemer	
Steel, or	
equal to J. C. 10, 14 x 20.....	\$5.50@5.75
B. Grade,	
full weight	
IX, 14 x 20.....	\$6.25@6.75
N. B.—The reduction per box on lighter	
Plates than IC, 14 x 20, is as follows:	
100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.....	\$16.50@17.00
About 30 lb coating.....	15.75@16.25
About 20 lb coating.....	13.75@14.25
About 15 lb coating.....	11.75@12.25
About 8 lb coating.....	10.50

Boiler Plates, American—

IXX, 14 x 28..(112 sheets).....	\$12.50
IXX, 14 x 28..(112 sheets).....	13.50
IXX, 14 x 31..(112 sheets).....	15.00

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.....	\$15.00
Steel Lock Frame, per doz.....	18.00
Daisy Improved pattern, per doz.....	18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896. 30¢@35¢ Copper and Bronze, 8¢ per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 6, 1899.	
Tin.....	50%
Galvanized.....	50%
Fittings for do.....	40%

Zinc—

600 lb casks per lb.....	6 1/2¢
Per lb.....	7 1/2¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
80 gal.....	70¢@10¢
85 and 40 gal.....	70¢
Other sizes up to 52 gal.....	60¢@10¢@10¢
52 gal. and above.....	60¢

Extra Heavy Boilers:

18 to 52 gal.....	60¢
53 gal. and above.....	55¢

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:

Basin Cocks.....	60¢
Bath Cocks and Double Bath Cocks.....	65¢

Bibs.....	65¢
Bibs, Flanged.....	65¢

Fuller:

Bibs.....	70¢
Basin Cocks, Nos. 1 to 4.....	70¢
Bath Cocks, No. 4.....	\$2.40 each net

Ground Key Work:

Finished Bibs.....	55¢@5¢
Rough Bibs and Stops.....	70¢
Rough Stop and Stop and Waste	
Cocks.....	70¢@70¢@5¢
Rough Stop and Stop and Waste	
Cocks, Patent 1.....	65¢@65¢@5¢

Miscellaneous—

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STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals
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Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses,
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and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

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- Presses and Dies.**
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Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Swaine, F. J. Co., St. Louis, Mo.
- Presswork.**
Kirk Mfg. Co., Toledo, O.
- Punching Machines.**
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Garvin Machine Co., 257 Spring Street, New York.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.
- Radiators, Hot Air.**
Burton, W. J. & Co., Detroit, Mich.
Castle, Wilmot & Co., Rochester, N. Y.
Independent Register Co., Cleveland, Ohio.
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American Radiator Co., Chicago, Ill.
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Frink, I. P., 551 Pearl St., New York.
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Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.
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Shepard, Sidney & Co., Buffalo, N. Y.
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Dixon, Jos. Crucible Co., Jersey City, N. J.
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Stowell Mfg. Co., Jersey City, N. J.
- Roofing Edger.**
Danzer Metal Works, Hagerstown, Md.
- Roofing and Siding, Iron and Steel, Corrugated and Plain.**
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Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Iron & Steel Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
- Roofing Nails.**
Salem Nail Co., 379 Pearl St., N. Y.
- Roofing Slate.**
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Galt, John & Sons, 253 Broadway, N. Y.
Genuine Bangor Slate Co., Easton, Pa.
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American Sheet Steel Co., New York.
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Taylor, N. & G. Co., Philadelphia, Pa.
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Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

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Cincinnati Stamping Co., Cincinnati, O.
Courtright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

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Colwell Lead Co., 63 Centre St., N. Y.

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Sinks.
Lalanc & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.
Rasner & Dinger, Pittsburgh, Pa.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Smoke Test Machine.
Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
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Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.

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Sackman, F. A., Cleveland, O.
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Dixon, Jos. Crucible Co., Jersey City, N. J.

Stove Casters
Kramer Bros., Dayton, O.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Freshrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Stove and Metal Polish.
Ayling Bros., Chicago, Ill.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Millwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.
City Forge & Iron Works, Dayton, O.

Stove Repairs.
Braner, A. G., St. Louis, Mo.
Clark, Henry N. Co., Boston, Mass.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Kramer Bros., Dayton, O.
Magoon, A. J. & Son, Providence, R. I.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Fanner Mfg. Co., Cleveland, O.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
- Stoves and Ranges.**
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynston Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Clad, V. & Sons, Philadelphia, Pa.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Eclipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Graft Furnace Co., 203 Water Street, New York.
Gurney & Co., Boston, Mass.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Schneider & Trenkamp Co., Cleveland, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Monarch Stove & Mfg. Co., Mansfield, Ohio.
Thomas, Roberts, Stevenson Co., Philadelphia, Pa.

Stoves and Ranges, Oil, Vapor and Gasoline.
Hessler, H. E. Co., Syracuse, N. Y.
Monarch Stove & Mfg. Co., Mansfield, Ohio.
Schneider & Trenkamp Co., Cleveland, O.

Street Lamps, Gasoline.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

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Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.
- Tinners' Trimmings.**
Litchfield, J. M., 105 Beekman St., New York.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Valcan Metal Refining Co., 157 Cedar St., N. Y.
Valcan Western Co., Streator, Ill.

Tinware.
Shepard, Sidney & Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.

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Clayton & Lambert Mfg. Co., Detroit, Mich.

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Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

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Berger Bros. Co., Phila., Pa.
Downman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Meurer Bros. Co., Brooklyn, N. Y.
Rosen, D. J., 439 Canal St., N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

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THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be enclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A good FURNACE MAN can find a permanent paying position in New York City with a future if he is the right kind. I want a man to be my general assistant. He must be able to make his own visiting list in soliciting orders for high grade furnace work and have the address to secure an audience with architects and high class custom trade. He should have a competent knowledge of the business in all its branches and detail. Must be able to go to a building and measure and design the work and then take charge of the men or superintend the job. A man with a knowledge of steam and hot water work and familiar with buying all kinds of heating materials and estimating and ability in the office is the kind of a man I want, if he has ambition. To the right man I offer an opportunity. "Warm Air Man," care *The Metal Worker*, New York. Dec. 14

Bright young men, unmarried, who would like to learn the tin and sheet iron business; steady work; those with some knowledge of the business preferred; steady work and advancement according to ability; young men who would be willing to learn to erect work on the road. Apply to Box 428, Hartford, Conn. Dec. 14

Experienced SALESMAN for our steam and water heaters in Philadelphia and vicinity. The Prize-Painter Stove Heater Company, Reading, Pa. Dec. 14

An experienced SHEET METAL STAMPER for stamping sheet metal ornaments; must be a hustler and able to make his own dies; steady work for the right man; give age, experience and wages expected. Gerock Bros. Mfg. Company, 1252 Manchester avenue, St. Louis, Mo. Dec. 14

To correspond with good all-round TINNERS and PLUMBERS who don't use tobacco; sober and steady; a good, steady job every day; those who take an interest in their work and do it right preferred. Geo. W. Gibney, Pawling, N. Y. Dec. 14

An experienced man to work on power press to form cornice molding; must understand his business. "Energetic," care *The Metal Worker*, New York. Dec. 14

A situation is open for a first-class MOLDER; about 40 years of age; competent to act as assistant foreman in foundry making ranges, furnaces and hot water or steam boilers; state wages expected, and give references. "Range," care *The Metal Worker*, New York. Dec. 14

A practical FOREMAN; must be competent to figure and give estimates on furnace and all kinds of house heating, all kinds of plumbing and sheet metal work; shop employs from 15 to 20 men; good salary and interest in the profits to a competent and industrious man; must be a total abstainer; send references. "Letter Carrier, No. 97," Brockton, Mass. Dec. 14

EXPERIENCED SALESMAN for New England trade. Phillips & Clark Stove Company, Geneva, N. Y. Dec. 14

SUPERINTENDENT OF FOUNDRY, understanding thoroughly the molding, pattern and mounting business pertaining to the manufacture of stoves, ranges, furnaces and house heating boilers; New England man preferred; state experience, where now employed, salary expected, and how soon could leave present position; good opportunity for advancement. "H. D. J.," care *The Metal Worker*, New York. Dec. 7

GALVANIZING FOREMAN wanted who can construct and manage small plant. "Confidential," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Dec. 7

At once, a first-class TINSMITH who understands furnace and bench work and general jobbing in country town 40 miles from New York; a yearly job at good wages; must be steady and sober. "Yearly," care *The Metal Worker*, New York. Dec. 7

By a manufacturer of gas ranges, a man to fill the position of INSPECTOR; must understand thoroughly the requirements of the position; kindly give experience and salary wanted; a permanent position to the right man. "Gas Range Manufacturer," care *The Metal Worker*, New York. Dec. 7

For 1902, a first-class SALESMAN with an acquaintance with trade in New York and adjacent territory; references; state salary expected, age and experience. "Experienced Man," care *The Metal Worker*, New York. Dec. 7

SPINNER for sheet metal; must be first-class; highest wages. Apply to the Pedlar Metal Roofing Company, Oshawa, Canada. Dec. 7

Immediately, two good SLATE ROOFERS. Apply to the Peet & Schuster Company, Springfield, Ohio. Dec. 7

Young man about 20 to 25 with experience on roof and furnace work, in a regular jobbing shop; must be a hustler; German preferred; state wages; a steady job to the right man. William Pahland, 415 Richmond Terrace, New Brighton, S. I., N. Y. Dec. 7

Two first-class TINNERS and SHEET IRON WORKERS; must be sober and strictly business-like. A. J. Shide, 103 South Forsyth street, Atlanta, Ga. Dec. 7

At once, an up to date TRAVELING MAN who can show a good selling record; one that has an acquaintance among the hardware and implement trade in Iowa preferred and capable of selling a varied line to the above class of trade. Address Lock Box 712, Des Moines, Iowa. Dec. 7

A HOUSE HEATING BOILER SALESMAN of experience, with A1 reference; must be of good character and habits; give full particulars, with salary expected. "Character," care *The Metal Worker*, New York. Dec. 7

At once, a good, sober, competent TINNER, PLUMBER and FURNACEMAN for inside and outside work; steady job for the right man; state wages expected and give references; good college town. N. B. Twogood, Mount Vernon, Iowa. Dec. 7

SUPERINTENDENT for a stove and range manufacturing business; one who is thoroughly familiar with the construction of stoves and steel ranges, also must have some experience in nickel room; references required; young man preferred. "W. H.," care *The Metal Worker*, New York. Dec. 7

January 1, 1902, a first-class TINNER at inside and outside work, hot air furnace, steam and hot water, some plumbing and wind mill work; wages \$12 per week; steady work the year round; must be honest, sober and industrious, with some knowledge of hardware; give references. Box 177, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 7

A good TINNER, understanding all the branches, also furnace work and plumbing, thoroughly; young man of good habits preferred; steady work. "D. P. B.," Forestville, N. Y. Dec. 7

A bright, hustling salesman, fully experienced in the plumbing supply business; a fine opportunity for the right man. "B. G.," care *The Metal Worker*, New York. Nov. 30

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of a large stove plant; state experience, reference, age, &c. "Trade-Mark," care *The Metal Worker*, New York. Nov. 23

First-class SALESMAN to travel and sell a large line of stoves, ranges and furnaces in the New England States; one who can sell goods may address, with references. "W. H. G.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Nov. 23

SITUATIONS WANTED.

TIN and SHEET IRON WORKER understanding stove and range work; 18 years of experience. "Finer," 522 Tenth avenue, New York. Dec. 14

Expert HEATING ENGINEER; skilled draftsman, designer; thoroughly practical in the mechanical and commercial parts of the heating business, would engage with some manufacturer making, or soon to make, a full line of heating boilers who is a pusher for business; references furnished. "Expert," care *The Metal Worker*, New York. Dec. 14

A PLUMBER wishes work in city or country; ten years' experience. Address Thomas M. Spedon, 328 East Sixtieth street, New York. Dec. 14

By a practical PLUMBER and STEAM FITTER with 15 years' experience, sober and reliable, can estimate from plans and will guarantee to be a first-class lead worker, also capable of figuring radiation, a hustler and up to date; desires to make a change to some Southern town or city where the winters are not severe; correspondence desired for steady position only. John Recter, General Delivery, Glens Falls, N. Y. Dec. 14

By a first-class PLUMBER, GAS and STEAM FITTER with 12 years' experience; a first-class lead worker and capable of doing all kinds of steam and hot water heating; strictly temperate in habits; can take charge of work if necessary; all I ask is a fair trial,

but do not care to correspond with any but reliable firms that can give steady employment if satisfactory. "Practical," 90 West street, Glens Falls, N. Y. Dec. 14

By an A1 mechanic; can make anything that can be made out of sheet metal, and cut patterns for same; 22 years' experience. "X.," 1104 Russell street, Detroit, Mich. Dec. 14

An ENGINEER with good business qualifications and practical experience with all kinds of house heating and plumbing systems, would make a change from present position; competent to act as manager, engineer or buyer in connection with either a heating or plumbing business; good draftsman; good references; would go South or West; well acquainted with New England trade. Address "H. & P.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Dec. 14

By TRAVELING SALESMAN, for 1902, position with an established trade in tin plate and sheet metals in Ohio, Indiana; nothing less than \$2000 a year salary and expenses will be considered. Address Lock Box 56, care Station A, Columbus, Ohio. Dec. 14

Young man, age 27, experienced bookkeeper, with four years' experience in the retail hardware business, desires a position with a good wholesale house. For references and particulars address Lock Box 21, Wayland, N. Y. Dec. 14

Young man, age 25, wants good line of goods, stoves or hardware, for Western Pennsylvania and Ohio; acquainted with trade and best of references. "V. A.," care Anderson Hotel, Bellaire, Ohio. Dec. 14

By a PLUMBER, 24, eight years' experience; temperate and steady; would like to work in tin shop where I could learn tinsmith trade. "Plumber," care *The Metal Worker*, New York. Dec. 14

As TRAVELING SALESMAN or MANAGER of hardware store; 14 years' experience in the retail trade; seven years on the road for stoves in Eastern New York and New England. "Experience," care *The Metal Worker*, New York. Dec. 14

By a practical experienced stove moulder and pattern fitter as FOREMAN; have the ability to manage men with satisfaction; would like to correspond with some stove firm. "F.," care *The Metal Worker*, New York. Dec. 14

By a CORNICE MAKER of 14 years' experience; understands cutting; no objection to bench work; Southern States preferred. "J. S.," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. Dec. 14

Young man, 18, wishes to begin as learner in any branch of the metal trade; no previous experience; willing to work. Mack Lascher, 126 Boerum street, Brooklyn, N. Y. Dec. 14

BOOKKEEPER, age 30, single; thoroughly experienced in manufacturing line; up to date methods; all round man; capable of taking charge of office; exceptional references; salary desired, \$20 per week. "Broad," care *The Metal Worker*, New York. Dec. 14

By a young man, age 28, at present employed by large range, stove and heater concern; experienced in bookkeeping, cost accounting, correspondence and shipping. "E. A. C.," care *The Metal Worker*, New York. Dec. 14

A man fully acquainted with all the details of the wholesale plumbing and steam supply trade, desires permanent engagement; references exchanged. "Capable," care *The Metal Worker*, New York. Dec. 14

Of trust by a master PLUMBER and HEATING MAN of 30 years' experience, 15 years as traveling salesman selling to the trade; can make plans; good solicitor, and superintend work; A1 testimonials; up to date with acetylene plants. "M. J.," Box 700, Milford, N. H. Dec. 14

A first-class, practical DESIGNER wishes to change his position; expert in designing ornament; proficient in all the styles; is a capable wood carver and for the past five years has been the designer for a large pattern shop making a specialty of high-class stove patterns; has good business training and executive ability; makes perspective water color sketches and details; can submit samples and photos; possesses highest references and is willing to invest some capital in a good proposition. "Steel," care *The Metal Worker*, New York. Dec. 7

By a young man in the sheet iron manufacturing line as BUYER or ASSISTANT; has had office and factory experience and is familiar with cost and estimate work on special sheet iron goods. "Iron," care *The Metal Worker*, New York. Dec. 7

To represent manufacturers as their agents on the Pacific Coast, strictly on commission, the following lines: Steel ranges, up to date air tight heaters, steel and cast hollow ware, stove pipe, elbows, dampers, rods, bolts, urns or kindred lines. What have you got? "S. A. M.," 748 First street, Portland, Ore. Nov. 23

FOR SALE.

Well established Plumbing, Roofing, Range and Furnace Business. Good jobbing trade all year round. Good reason for selling. Address

"ROOFING,"

Care The Metal Worker, New York.

WANTED.

Machinery, either new or second-hand, in first-class condition, for corrugating sheet metal up to 12 ft. long. Also machinery for making Metal Lath. Address

"LONG,"

Care The Metal Worker, New York.

Rare Chance

For a good hustling Tinsmith, Plumber, Steam Man or Hardware Man to buy the whole or part of a Stove, Plumbing and Heating Store. A live man in either of the above branches can do a good business. Good reasons given for selling and the best of references.

Address "X,"

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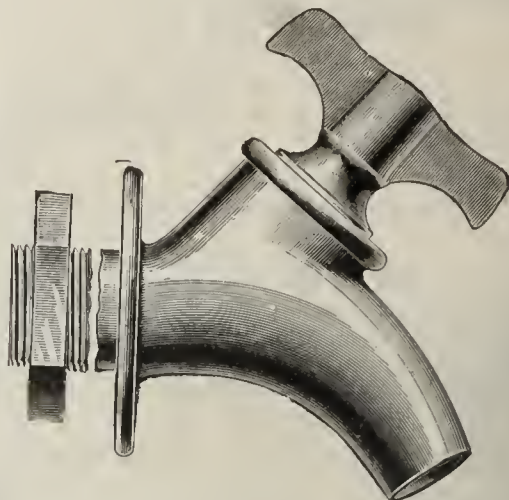
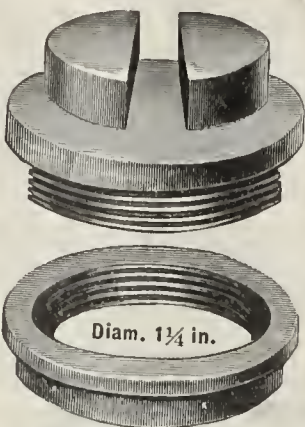




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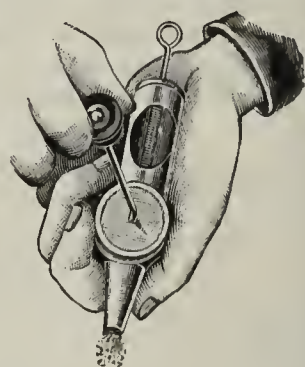
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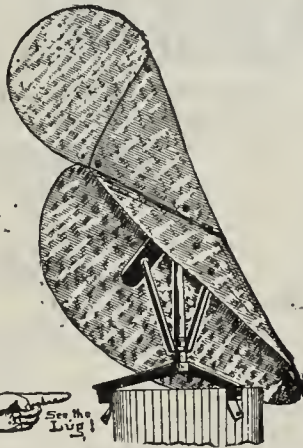
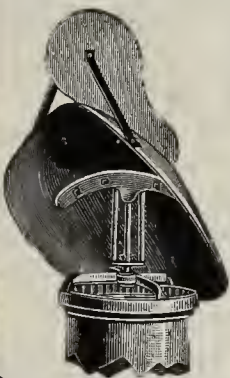
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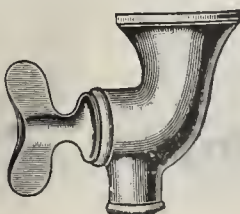
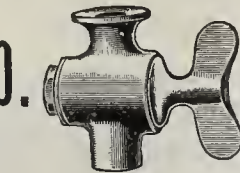
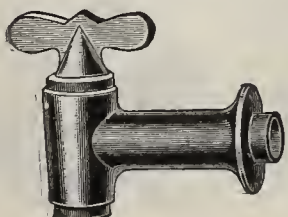
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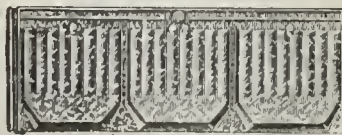
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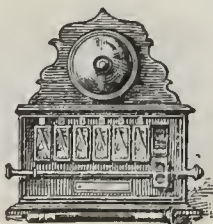
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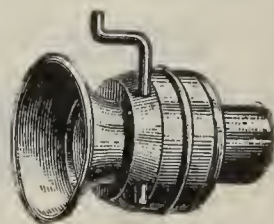
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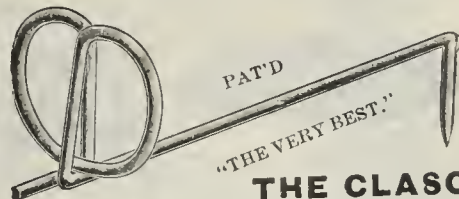
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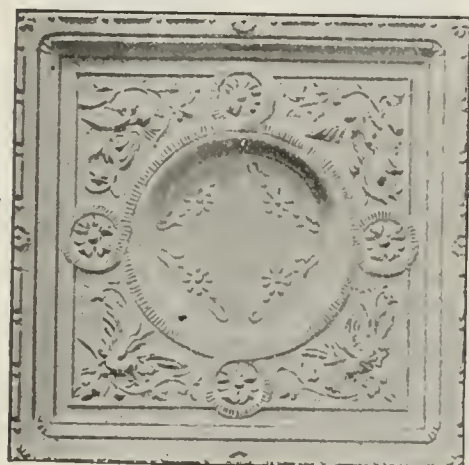


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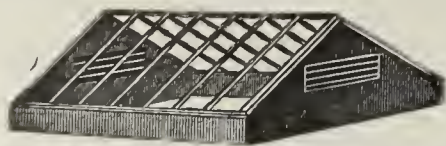


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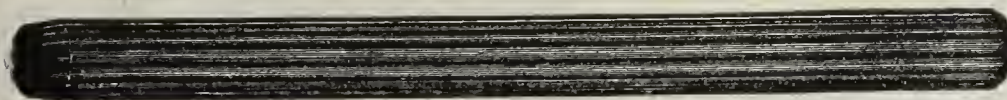
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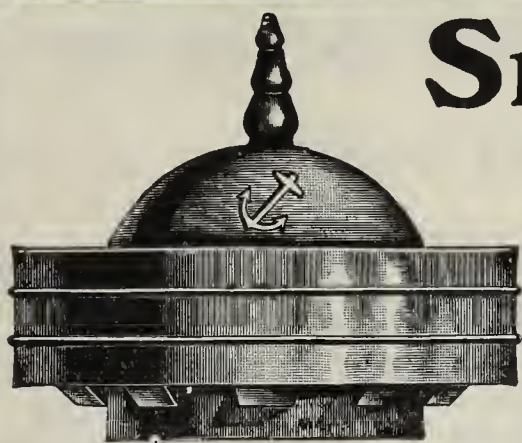


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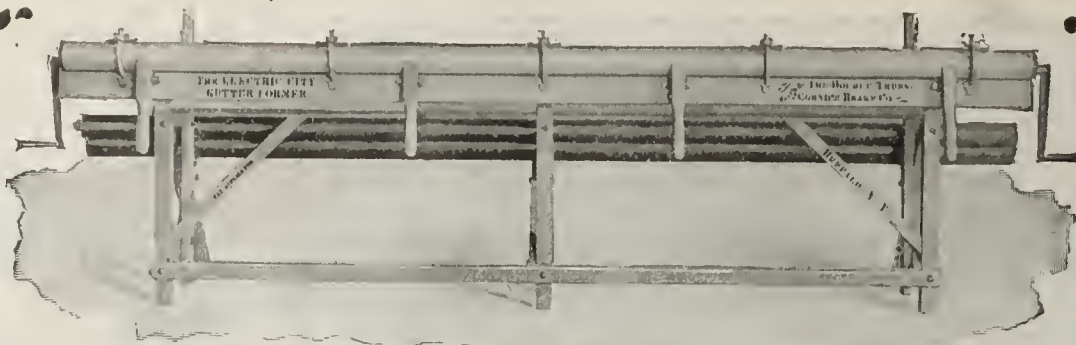
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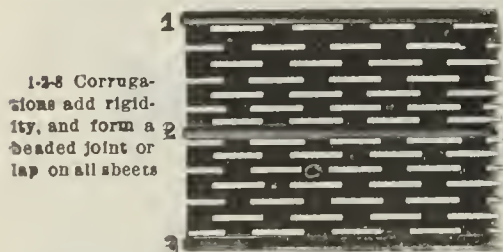
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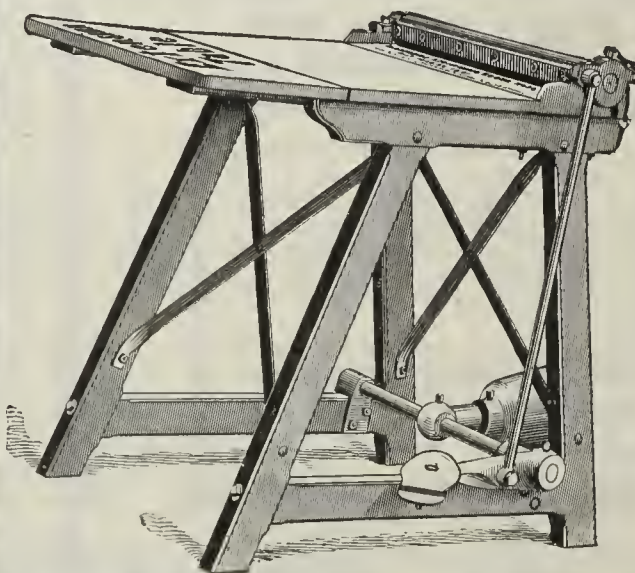
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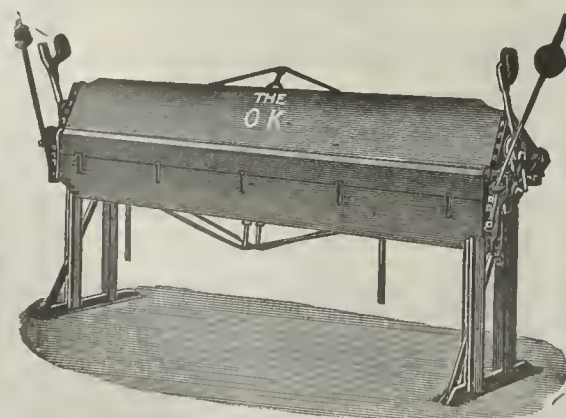
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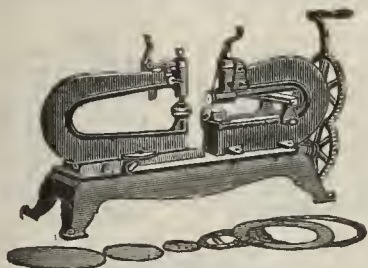
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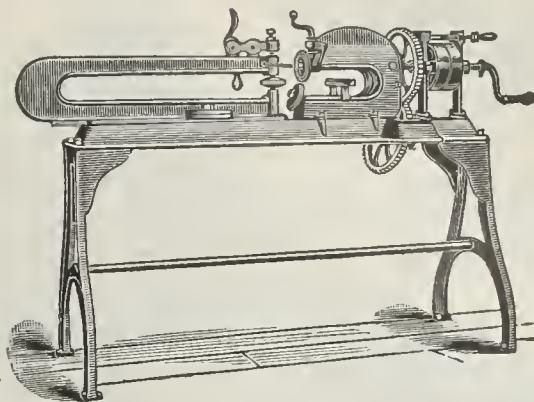
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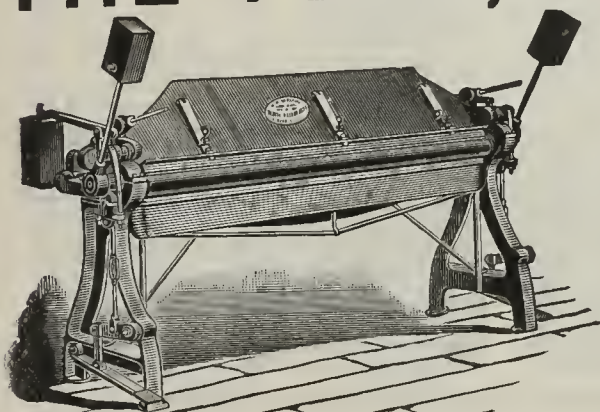
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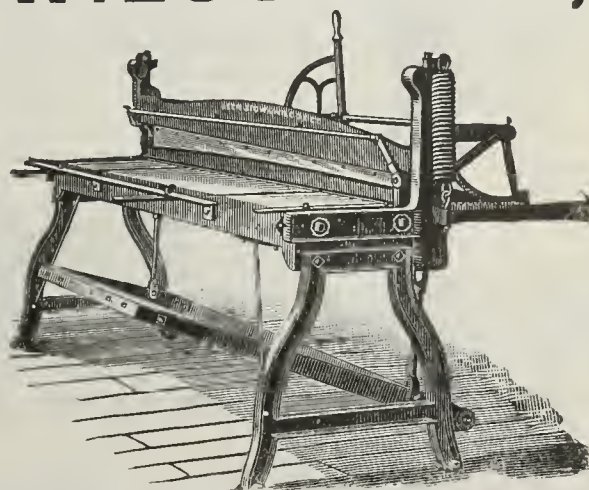
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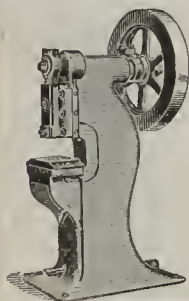
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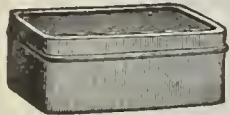
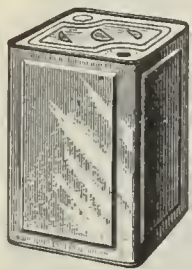
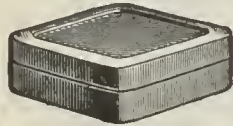
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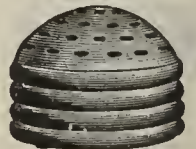
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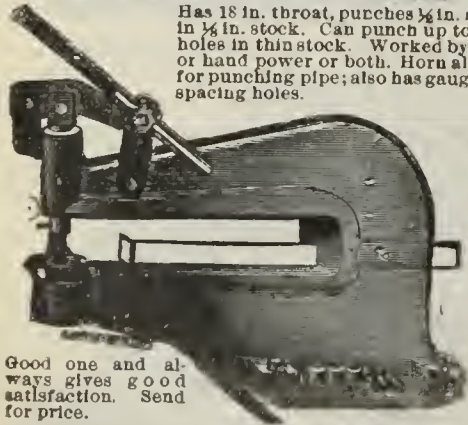
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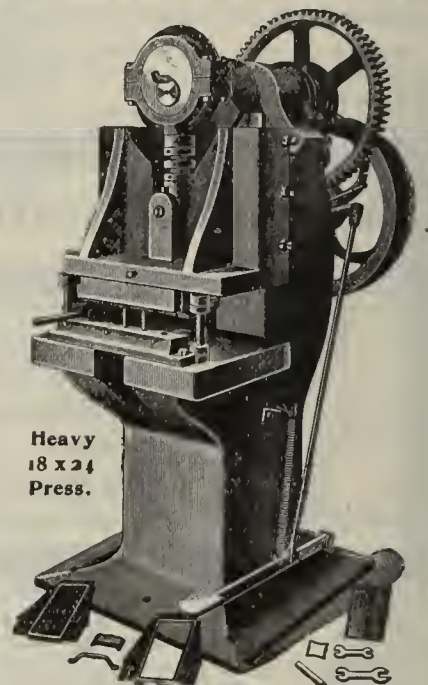
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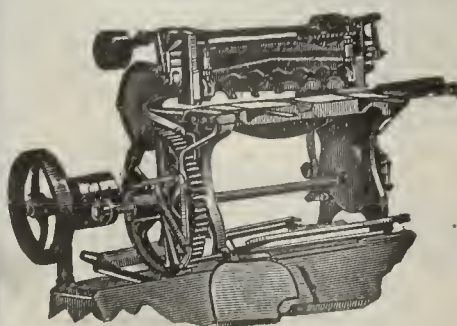
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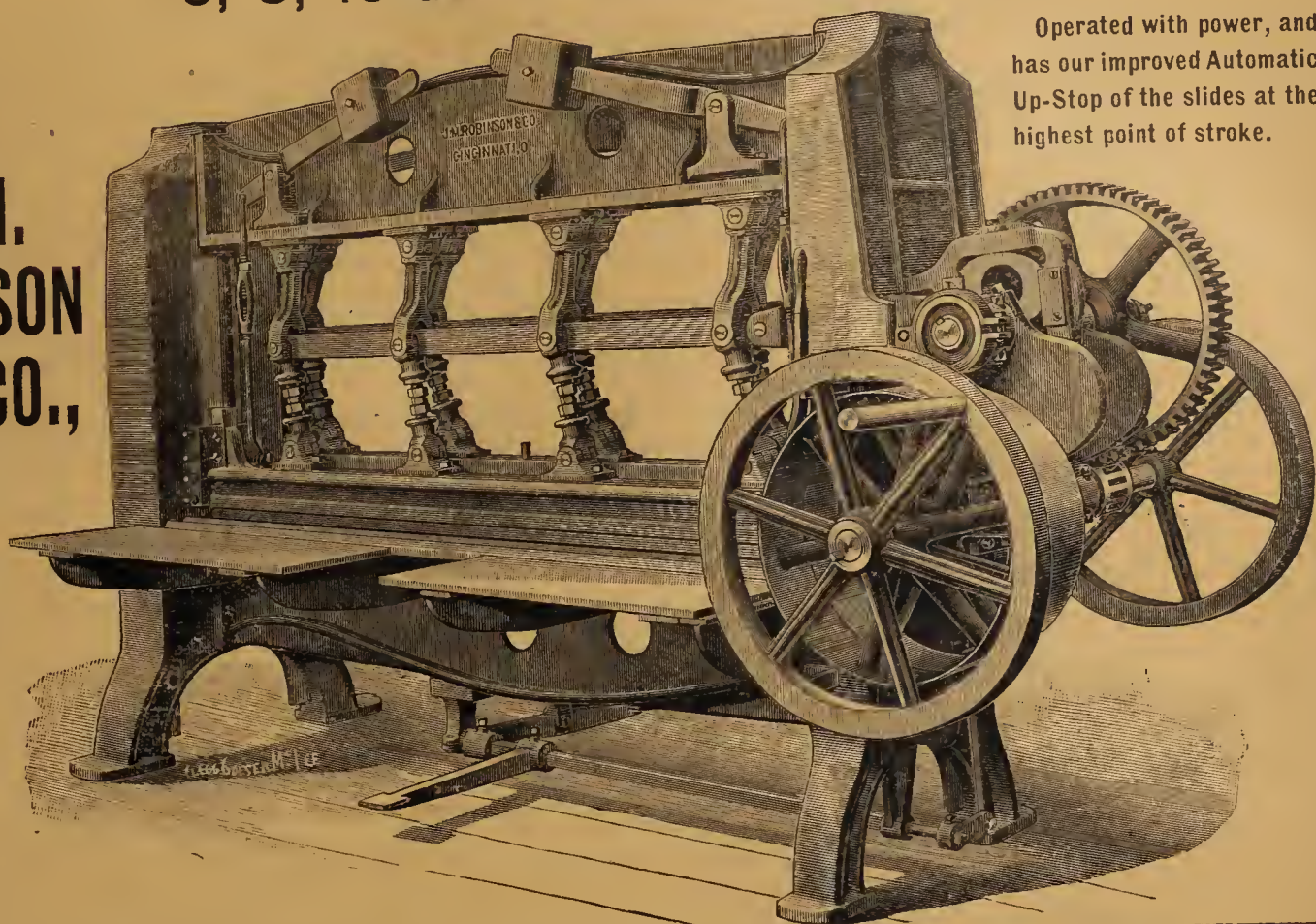
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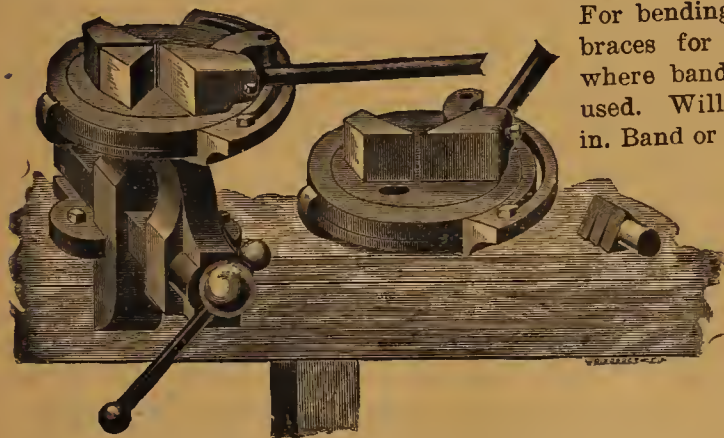
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Dunbar Foundry Pig Iron.

Dunbar Connellsville Coke for Foundry Use.

American Sheet Iron Co.'s Sheet Iron.

American R. G., cleaned, of uniform black color.

Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK

TINNERS'

TOOLS and MACHINES.

TINNERS'

SUPPLIES

186, 188 & 190 Water Street, at

248 & 250 Pearl Street,

NEW YORK.

UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.

CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

Oven Capacity

is one of the principal requirements in a modern range. This is increased 50 per cent. in the

MODEL HUB

With Steel Oven,

by baking on oven bottom and oven rack at same time.

NO CHANGING OF FOOD NECESSARY.

SMITH & ANTHONY CO., Boston.

It Takes Sand

for a merchant in any line of business to maintain a fair, uniform price when some competitor with cheap inferior goods is shouting bargain prices; but it's no secret that honest, reliable goods always win in the end and that's why so many successful stove merchants sell

GLENWOODS.

Weir Stove Company, Taunton, Mass.

HEATER PIPE TIN.

We can make prompt shipment of the following sizes:

I C.

20 x 23
20 x 26
20 x 29½
20 x 32½
20 x 36

I X.

20 x 23
20 x 26
20 x 29½
20 x 32½
20 x 36
20 x 39

We solicit your orders.

McCLURE & CO.,

Manufacturers of Tin Plate,

PITTSBURG, PA.

211, 213 and 215 Second Ave.

PHILADELPHIA, PA.

115 North 7th Street.

The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

OL. LVI.
 NUMBER 25.

NEW YORK AND CHICAGO, DECEMBER 21, 1901.

ONE DOLLAR A YEAR.
 SINGLE COPIES 5 CENTS



WALWORTH HEAVY PIPE VISE.



A first-class Tool for General Machine Work. Takes to 6-inch.

BOSTON, 128 Federal Street
 NEW YORK, Park Row Building.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK.
 77 Oliver St., BOSTON.

Old Colony Bldg., CHICAGO.
 Prudential Bldg., ATLANTA, GA.



STOVE LININGS

MCLEOD & HENRY CO.,
 TROY, N. Y.

Gray Iron Castings. S. CHENEY & SON,
 Manlius, N. Y.

Excelsior Point No. 4.—COMPLETE CONTROL OF THE FIRE.

By the system of check drafts and dampers used on the Excelsior Range, the operator has perfect control of the fire, and there is not the slightest difficulty in keeping fire over night. Even with a weak draft in the chimney the Excelsior will give good results, as the firebox and flues are proportioned just right. Every Excelsior Range, no matter what size, can be depended upon to do good work, when properly set. There's no guess work about it.

ISAAC A. SHEPPARD & CO.

NEW YORK

PHILADELPHIA

BALTIMORE

When you examine our new booklet (to be had for the asking) you may find it sufficiently interesting to repay you for having sent your address to the Advertising Department.

American Sheet Steel Company
 Battery Park Building
 New York

WITH EVERY LINE OF...

STEWART STOVES

We send attractive printed matter. It helps your sales and requires less explanation and time, and time is money, and Stewart Stoves are great sellers.

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every issue.

NOTICE.

Silver, Nickel Platers and
 Brass Goods Mfrs.

MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.



CROSBY SPRING-SEAL

GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gate & Valve Co.,

BOSTON:
 95 Oliver St.

NEW YORK:
 78 John St.

CHICAGO:
 21 23 W. Lake St.



JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark. JENKINS BROS., New York, Boston, Chicago, Philadelphia.

FOLLANSBEE BROTHERS CO.,
 328-330-332 Second Ave.,
 Pittsburgh.
 Galvanized and Black Sheets.

The best brands of Roofing Tins are "Follansbee Pure Iron Old Style," and "Scott's Extra Coated," the demand for which is constantly increasing.

Philadelphia Branch,
 133 Arch Street,
 S. V. Reeves, Manager.

Steam Specialties.

RELIEF and NOISELESS BACK
 ELEVATOR VALVES, PRESSURE VALVES,
 STEAM TRAPS, PUMP GOVERNORS,
 STEAM AND WATER, STEAM AND OIL SEP.
 REDUCING VALVES, ARATORS,
 TANK TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS
KIELEY AND MUELLER,
 9-17 W. 13th St., - NEW YORK.

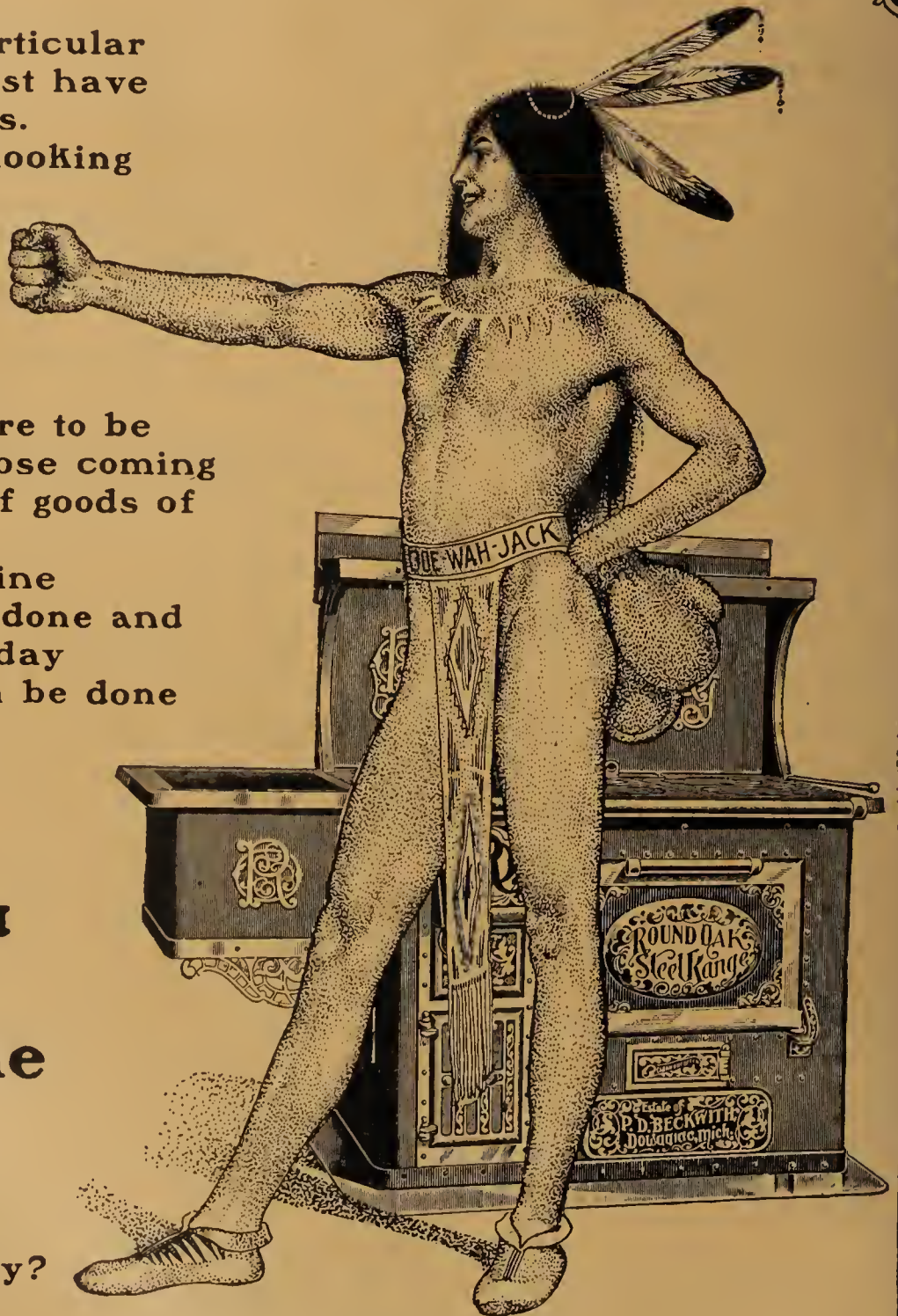
READ OUR "AD"
Page 6.
MAGEE FURNACE CO.,
 Boston.

ROUND OAK Standard of America

If you want particular results you must have particular goods. If you are not looking for particular results — but you are, every merchant is, and no results ever attained are to be compared to those coming from the sale of goods of genuine merit. What the Genuine Round Oak has done and is doing every day in the year can be done again with Round Oak Steel Ranges.

**Are you
game
to try the
best**

Steel Range on the market today? If your town is open, write us.



CAN YOU BEAT A PAIR LIKE THIS?

ESTATE OF
P. D. BECKWITH, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY

IT PAYS TO HANDLE GOOD GOODS
 CHANCE CUSTOMERS BECOME PERMANENT;
 EVERY SALE PROVES AN ADVERTISEMENT.



The Palace Regent

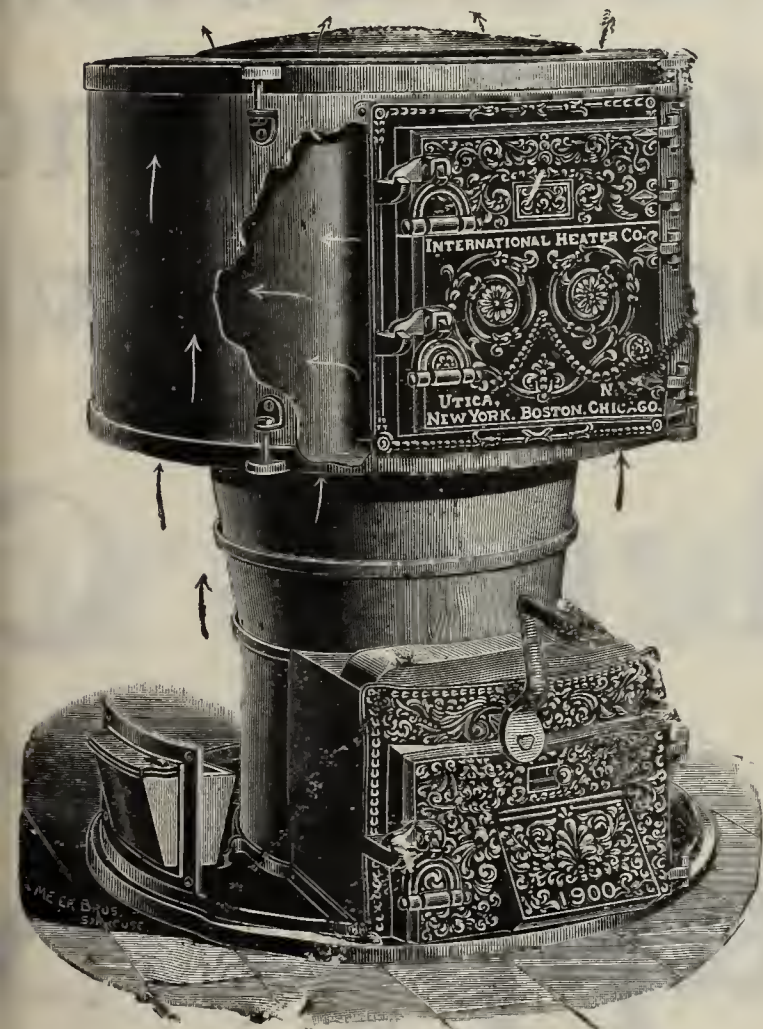
IMPROVED

WARM AIR FURNACE

With Natural Gas Ring if desired.

*Generous Combustion
 Spaces.*

*Large Area of
 Radiating Surface.*



Large Double Feed Doors.

Automatic Gas Damper.

**A THOROUGHLY GOOD HEATER
 AT A MODERATE PRICE.**

International Heater Co.,

UTICA, N. Y.

BOSTON.

NEW YORK.

CHICAGO.

DENVER.

Largest Makers of Heaters in the World.



FIRST PRIZE PARIS 1900



To all our Friends
and those who
Patrons, we wish

Merry Christmas

= = = and

Happy New Year

The Michigan Stove Works

Largest makers of Stoves

DETROIT. CHICAGO.

WORKS AT DETROIT, MICHIGAN.



FIRST PRIZE PARIS 1900



...s and Patrons,
...should be our
...h a

...rismas

...ew Year.

...ove Company,

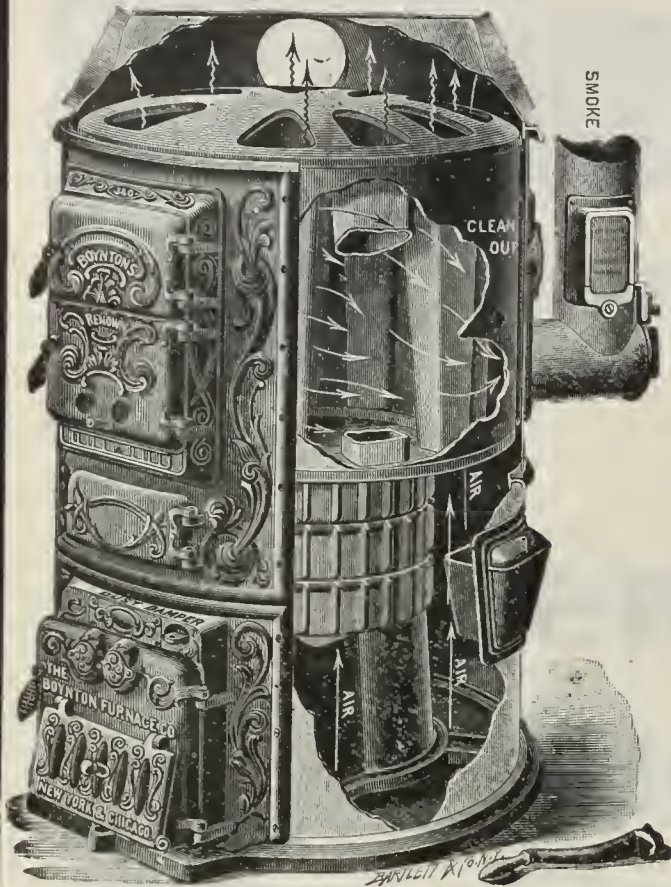
...and Ranges in the World.

...GO. BUFFALO.



BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK, CHICAGO.

Do You Keep Right Company?

People are frequently judged by the company they keep. A heating contractor is apt to be judged by the heaters he keeps company with.

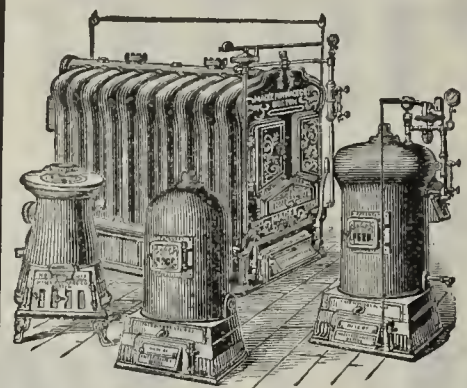
If he handles a heater that the consumer has learned to look upon as best, his ability as a fitter will likely be considered *Al*. Of course this isn't always true, but in the majority of cases it is. It's natural for people to think that if a dealer carries better goods he'll do that kind of work—they'll have more confidence in him.

The name "Magee" as connected with heating apparatus, has been favorably known for nearly a half century—has always stood for highest quality, as it does now. It certainly does help to turn patronage to contractors who use Magee Heaters. This is not idle talk. Fitters frequently write that the name "Magee" in their bids has helped them land this or that contract, even when their bids were highest.

MAGEE FURNACE CO., 32-38 Union St., Boston.

Makers, also, of the celebrated Magee Ranges and Furnaces.

Gold Medal, Highest Award, Paris Exposition.



Magee
HEATERS

FOR STEAM AND HOT WATER

Capacities: 100 to 6900 square feet Water Radiation; 200 to 4200 square feet Steam Radiation.

Most complete line made under one name in the United States.

Are you among those who have found MAGEE HEATERS profitable company?

QUICK MEAL

GASOLINE STOVES.



THREE important qualifications have brought about the "Quick Meal's" immense and ever increasing sale—Name, Quality and Merit.

The Name "Quick Meal" is well known and respected everywhere. The name "Quick Meal" on a stove is a strong guarantee in itself; it has for twenty years stood for "Recognized Standard of Excellence."

The Quality has always been the highest. The materials used are the very best that can be bought, and the workmanship is perfect owing to an intelligent force of skilled mechanics aided by long experience and an equipment of the best tools and machinery that money and brains can assemble. Merit has brought the "Quick Meal" to the front and keeps it there. It is perfect in its operation and it has always fully met every requirement. The name "Quick Meal" and its high quality of material and workmanship sell the stove; its perfect action when in use keeps it sold and sells more.

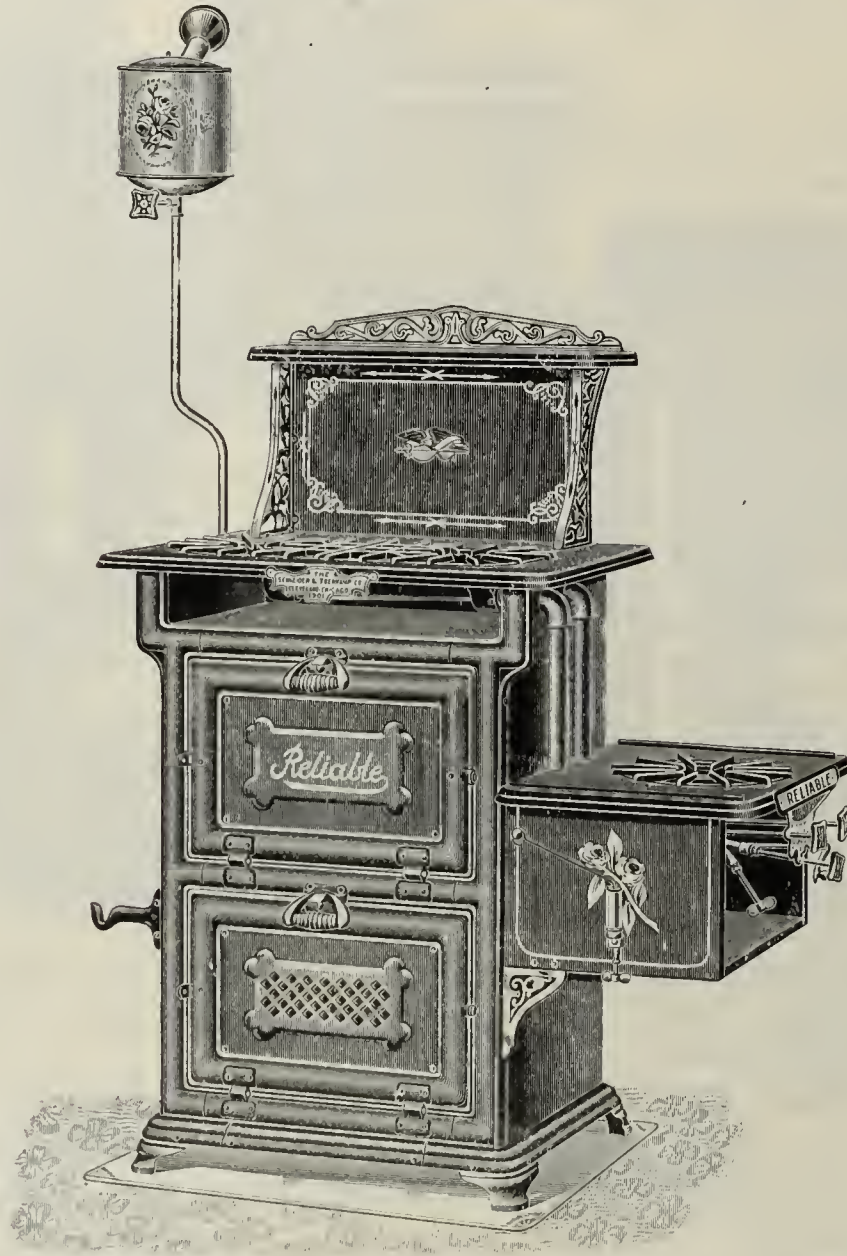
RINGEN STOVE CO.

SAINT LOUIS

1902

RELIABLE VAPOR STOVES

AND RANGES.



It is a source of gratification that we are again able to point to a number of improvements for the coming season, that not only signify our desire to keep abreast of the times, but our determination to keep the RELIABLE in the position it has so long enjoyed, that places it beyond competition.

Our trade-mark "RELIABLE" stands for all that is best in stoves the world over. If you wish to control the vapor stove business of your city, place a sample line of RELIABLE stoves on your floor. They will do the rest. This is the line that never disappoints.

Send for 1902 Vapor Stove Catalogue. It is yours for the asking.

THE SCHNEIDER & TRENKAMP CO.,
CLEVELAND, CHICAGO, SAN FRANCISCO.

The Monarch Line For 1902.

THERE
ARE NO
BETTER
MADE.

PROFIT
MAKERS
FOR
AGENTS.



Monarch Vapor Stoves.
Monarch Blue-Flame Oil Stoves.
Monarch Asbestos-Lined Ovens.

THERE has always been a **Striking Individuality** about Monarch Goods, and for the coming campaign we have very greatly increased this **important feature** by incorporating in **every pattern**, from the most **complete Family Range** to the cheapest **low Junior**, a number of **special features** entirely **original** with ourselves, so that **Monarch Agents** will be **greatly profited** in pushing **Monarch** goods exclusively. Our **NEW CATALOG** is going to be the **most beautiful edition** ever issued. Will be ready by January 1st. We are pleased to inform the trade that we will be represented in your territory by the branches and agents mentioned at foot, who will look after your interests very carefully, and serve you in the best manner possible. All correspondence coming from their territory will be forwarded to them promptly and receive the same prompt attention from the factory. We promise you the **BEST SELLERS** on the market, and only ask a **chance** to show you samples. **Monarch** goods do their own talking, and are "Bread cast upon the Waters." Drop us (our Branches or Agents) a postal for a copy of the **NEW CATALOG**. **IT WILL PAY.**

***The* Monarch Stove & Mfg. Co.**

MANSFIELD, OHIO.
Dec. 10, 1901.

BRANCHES: { 284-6 Pearl St., N Y. 67 Lake St., Chicago.
107 N 2d St., Phila. 191 Eagle St., St. Paul, Minn,
203 Wood St., Pittsburg.

H. R. BRUCE & CO., Agents, 419 Pike Bldg., Cincinnati, O.

1902



No. 480.

Our New No. 480 can be used for Gasoline or Coal Oil.

The TWIN BURNER

Line for the New Year is far and away ahead of
anything yet shown in

Gasoline and Oil Stoves.

Get Our Catalogue. Sent Free.

TWIN BURNER VAPOR STOVE CO.,

206-210 South Seventeenth St., ST. LOUIS, MO.

JEWEL STOVES AND RANGES..



A Complete, Well Advertised Line;
Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES

CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.



The DANGLER STOVE & MFG. CO.,

are pleased to inform the public and trade generally that they are prepared to furnish a line of Gasoline Vapor and evaporating Stoves, Blue Flame Wick and Wickless Oil Stoves and Gas Ranges, Stoves, Cookers, etc, for the season of 1902 with such marked improvements and changes that will make them the **LEADERS** for the coming season.

Will furnish new catalogs by January 1st. Correspondence solicited. We are prepared to arrange for territory.

THE DANGLER STOVE & MFG. CO.,
CLEVELAND, - - - OHIO, U. S. A.

All Cast Iron Double Radiator.



Quality First

IS THE PRINCIPLE FOLLOWED

In the Manufacture of

MUELLER

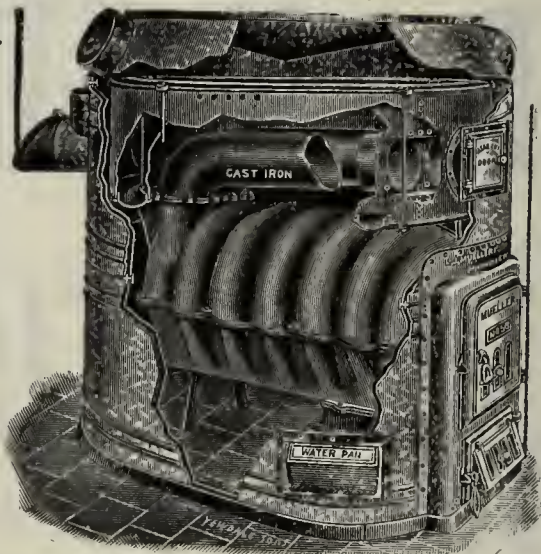
Furnaces and Boilers.

Made in all Styles—For all Kinds of Fuel.

Get Our Special Register Offer.

EVERYTHING IN THE HEATING LINE.

FOR WOOD.

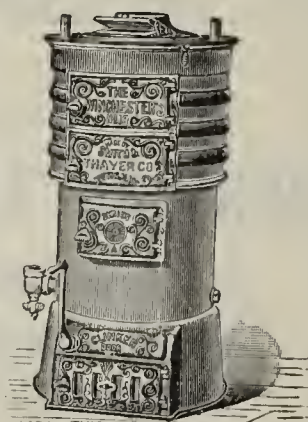


190 Reed St., **L. J. MUELLER FURNACE CO.,** Milwaukee, Wis.

WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



IN a large store on Washington St., Boston, they had a strong, well made boy's Express Wagon that *they* retailed with the maker's *name* at \$4.50.

In another large store (the block below), was exactly the same wagon, same size, weight, material, finish and built by the same maker, but without the maker's name on it, and the retail price was \$3.50.

The one without the maker's name has been used for the last two months by four good, healthy youngsters, ranging from five to eleven years old and is apparently in as good condition as when new.

You don't believe the maker's name could have made the other one of any more real value in any way?

We would like to impress upon you the fact that not one single penny of the price you pay for a "DIGHTON" Furnace is for a name. The "DIGHTON" price is for real furnace value, the real worth of the article, what it will do and the results your customer secures with it as compared with what some other Furnace has done under the same conditions.

DIGHTON FURNACE CO.,
TAUNTON, MASS.

FORTUNE GAS HEATER AND VENTILATOR.

Three Sizes--Nos. 18, 22 and 26.
FOR BURNING NATURAL GAS.

Entirely new and most economical.
New ideas and most efficient in operation.

Construction most modern and substantial.

Ornamentation and nickel trimming most elaborate.

Prices attractive.

WRITE FOR CIRCULAR AND SECURE AGENCY.

Deliveries Immediate.

MANUFACTURED ONLY BY

**THOMAS, ROBERTS,
STEVENSON CO.,**

Stove Founders,

PHILADELPHIA, NEW YORK, BUFFALO.



BRAND STOVE CO.

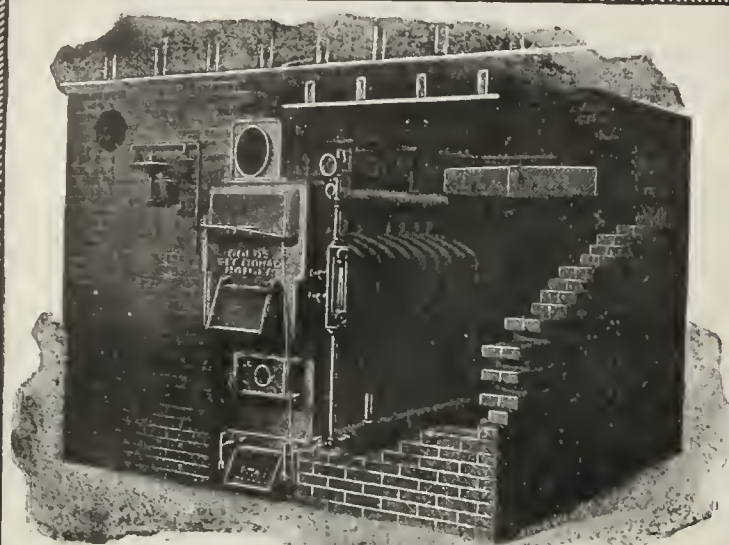
STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.
MILWAUKEE, WIS.

THE H.B. SMITH CO.

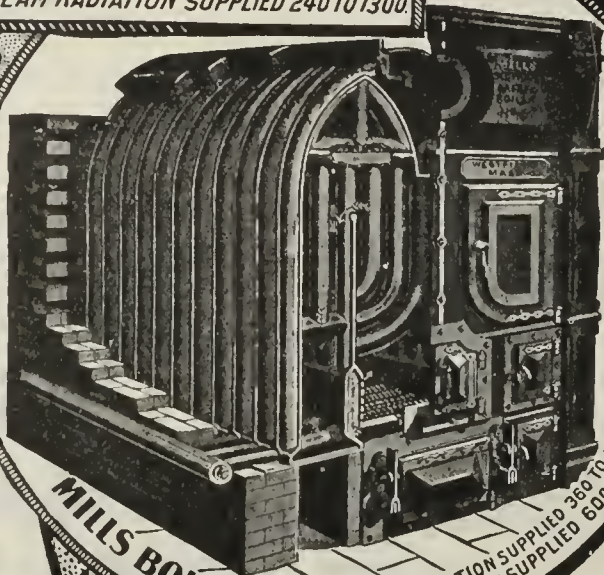
WESTFIELD, MASS.

**EUROPEAN
AGENT,
AUG. EGGERS**
BREMEN AND
NEW YORK
CITY.

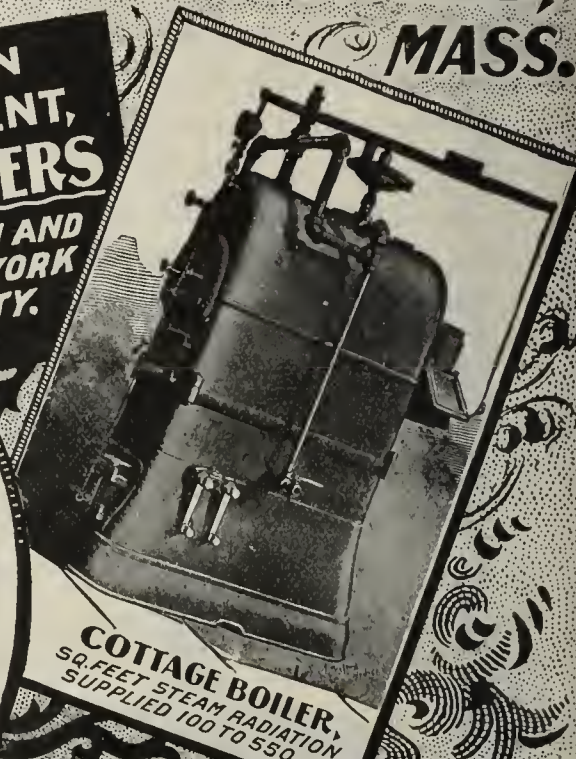


GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

**PACIFIC
COAST
AGENTS,
DUGAN BROS.**
SAN FRANCISCO
CAL.



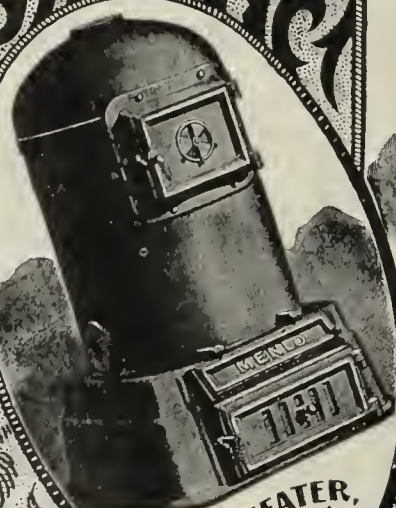
MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



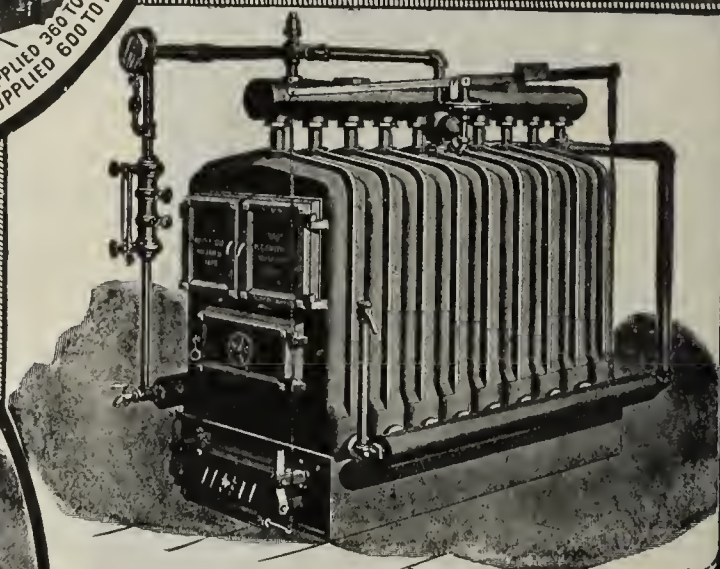
COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY,
100 TO 180 GALLONS.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

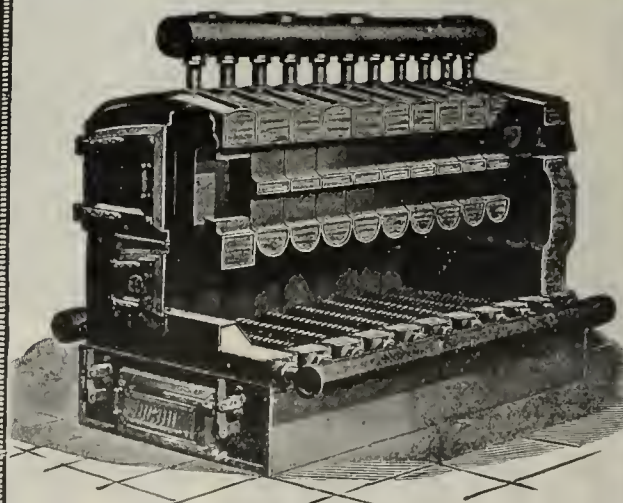
Western Agents

WESTERN BRASS MFG CO.

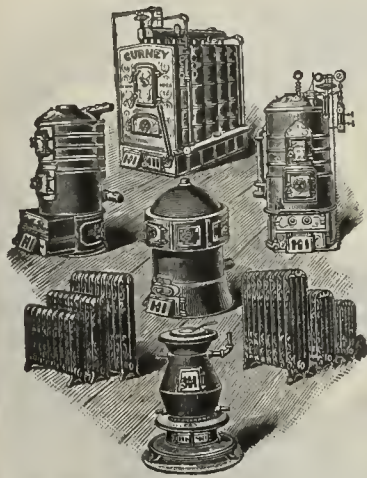
ST. LOUIS, MO.

SALESROOMS:

**133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.**



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.



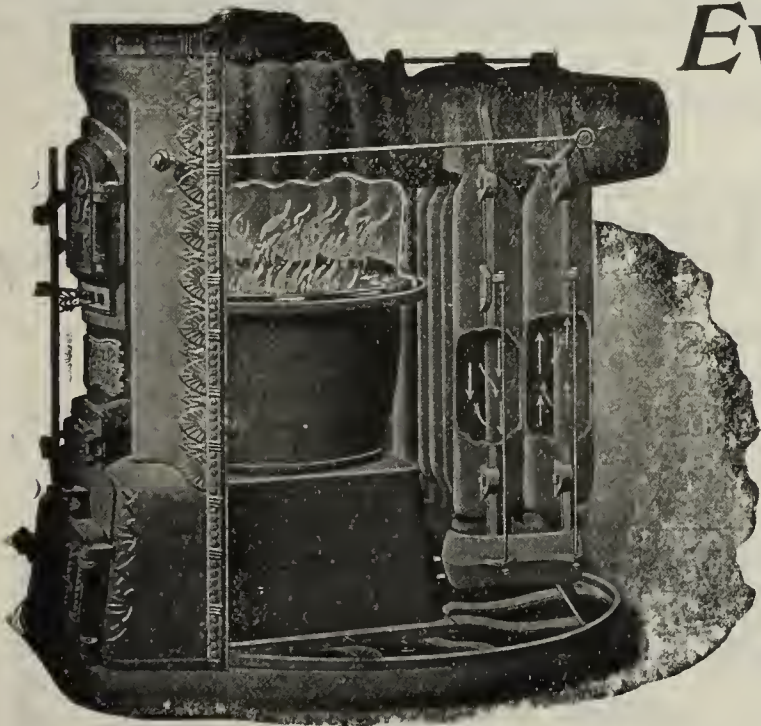
Gurney Heaters

Provide every advantage a heater can provide,—the very best material, the most durable and approved construction, insuring the greatest efficiency from the least possible consumption of fuel.

CAPACITIES FULLY GUARANTEED.

Don't you wish to handle the BEST? Send for our latest trade catalogue.

GURNEY HEATER MFG. CO., 74 Franklin Street, Boston.
111 Fifth Ave., New York City.
Western Selling Agents, **JAMES B. CLOW & SONS,** 222-224 Lake St., Chicago, Ills.



Everybody Knows,

or ought to know, and we are prepared to furnish the necessary information if they do not know, that

THE BENGAL FURNACE

burns less coal and gives more heat for the same amount of fuel than any other furnace made.

BOOKLET FOR THE ASKING.

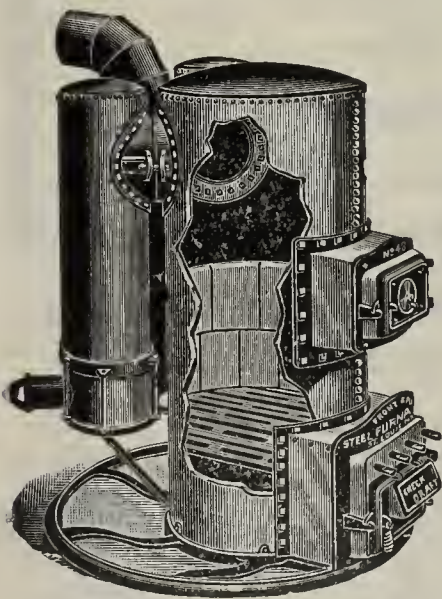
MAKE NO MISTAKE.

Secure the agency for the BENGAL before it is too late.

FLOYD, WELLS & CO.,
ROYERSFORD, - - PA.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover and Elm Sts., BOSTON, MASS.

A FEW POINTS OF SUPERIORITY



Fire pots are of fire clay tiling and never burn out.

Radiator surface in proportion to grate surface unusually large.

Only absolutely gas tight furnace made.

Novelty of construction makes an easy seller.

Tested for fifteen years.

Repairs are seldom necessary.

Are guaranteed to burn hard or soft coal.

No direct draft to warp out of shape, nor packed joints to leak gas.

Katalogue and prices will be mailed you upon application.

FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.

GILT EDGE FURNACES AND COMBINATION HEATERS.

Registers, and Tin and Galvanized Iron Furnace Fittings.

MANUFACTURED BY

R. J. SCHWAB & SONS CO., - Milwaukee, Wis.

Royal Heaters.

MANUFACTURED BY THE

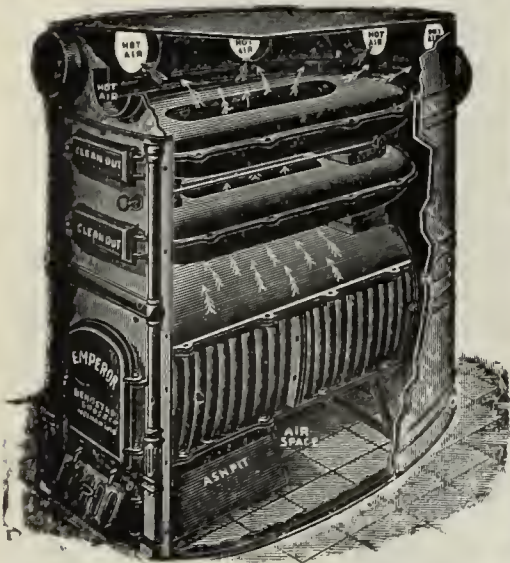
HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

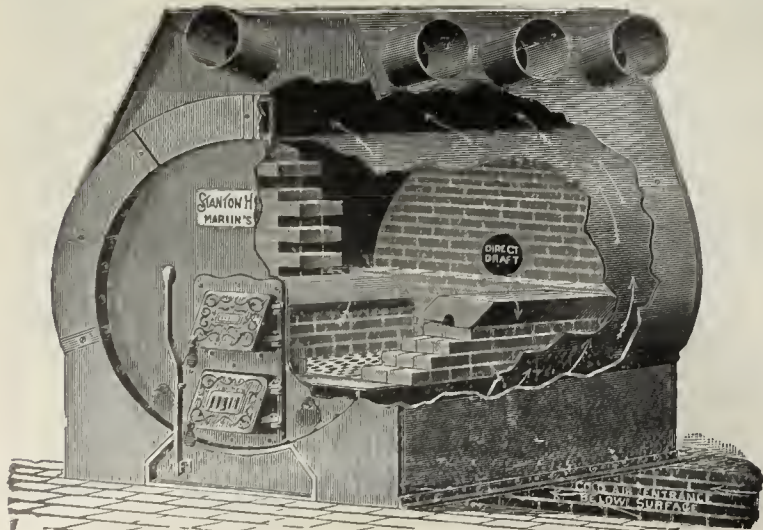
The Best and Cheapest Line of Wood Furnaces, . . .
 Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros. Co.
 NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, Ky., Apl. 5th, 1901.

THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly

ROBINSON-HUGHES & CO.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

See our advertisement next week.

They regulate
heat in residences,
offices, stores,
mfg. plants.
Guaranteed.

...Wanted...

Mechanics familiar with the installation of house heating furnaces
or boilers to sell and put up

No electricity
or compressed air.
Simple as
a heavy spring
motor can be.

SPRAGUE *AUTOMATIC* DAMPER and VALVE REGULATORS

Must be of good address and have ability as salesmen. Salary
\$15 per week and expenses. References required.

WRITE THE MANUFRS.,

HOWARD THERMOSTAT CO., Oswego, N.Y.
WEST WATER STREET

They Are
"Coal Savers."

Money Makers
for Dealers.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

AHEAD AS USUAL.

We have not only stood the test of time, but look at the
result of physical test of Quimby Engineering Company before
Building Committee, on competition for public work in an
Eastern city.

QUIMBY ENGINEERING COMPANY.

PHILADELPHIA, PA., Aug. 5, 1901.

MESSRS. J. H. McLain Co., Canton, O.

Gentlemen:—We hereby certify that one-half section of
the Cornell Boiler was tested by us to destruction to-day, and
that it was ruptured at Two Hundred and Fifty Pounds per
square inch hydraulic pressure. Very respectfully yours,

QUIMBY ENGINEERING CO.,

Attest: JOHN M. LUKENS, H. H. Quimby, Proprietor.
Chief of Bureau of Steam Engine and Boiler Inspection, City of
Philadelphia.

It Clearly Puts Our "Cornell" IN A CLASS BY ITSELF.

Think of it—250 pounds pressure on a Cast Iron Boiler.
This is the only kind of Boiler that is good enough for you.
We make all our Boilers of the different styles the same way—
the right way.

Have you our new Booklet, "Truth About Heating?"

THE J. H. McLain Co., Canton, Ohio.
"Everything for Heating."

NEW YORK.

CHICAGO.

INDIANAPOLIS.

PHILADELPHIA.

"TORRID HEATER."
FOR STEAM OR HOT WATER.

It is Practical in Design.

It is Safe, Being Tested to 200 Pounds.

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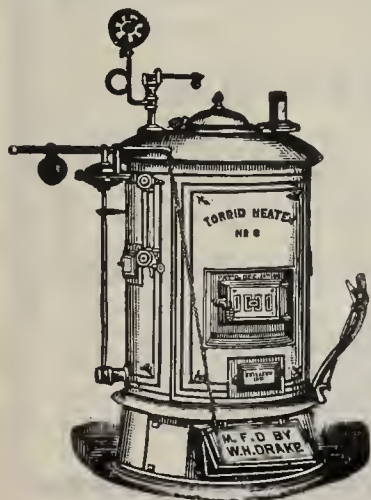
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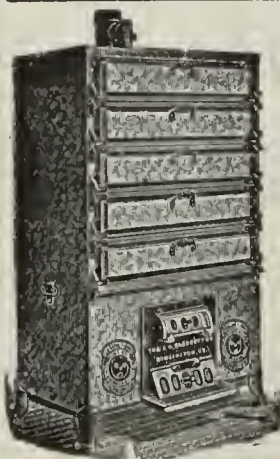
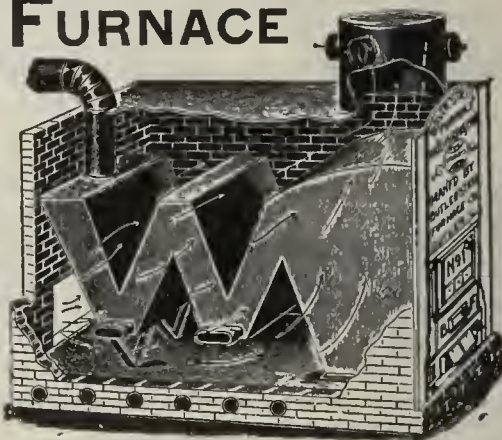
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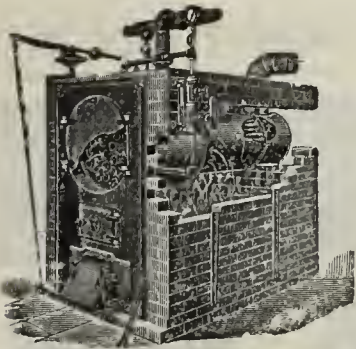
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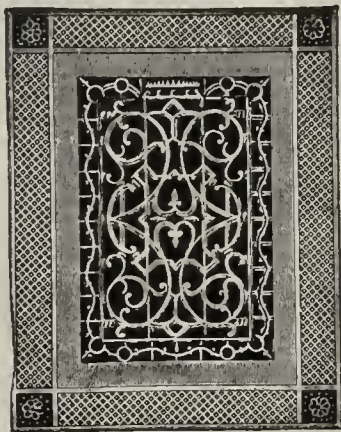
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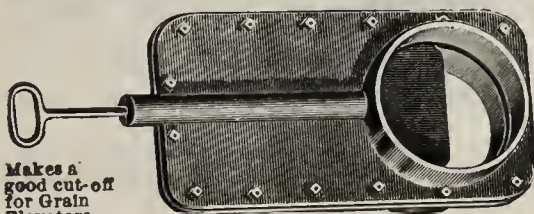
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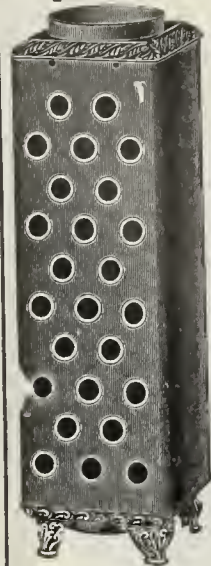
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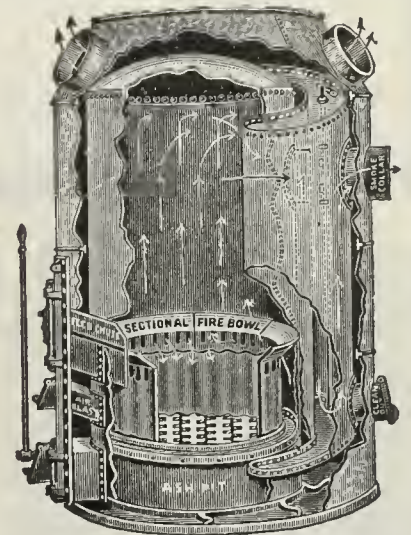
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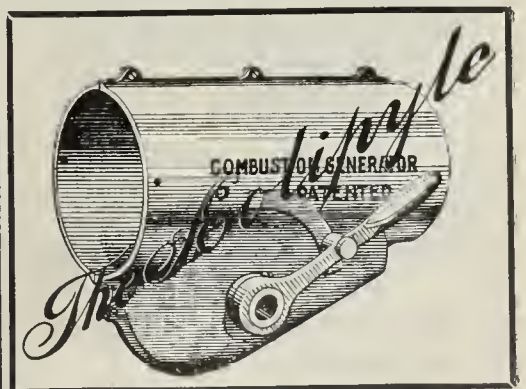
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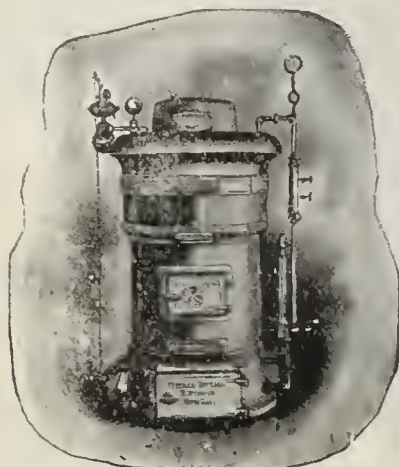
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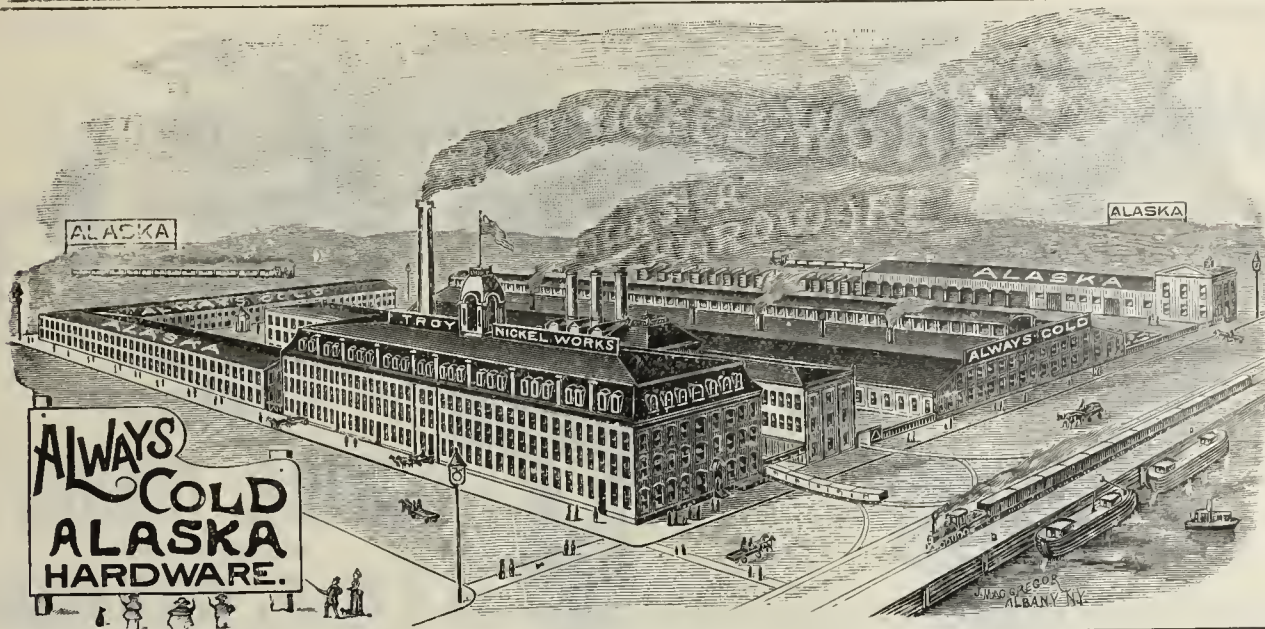
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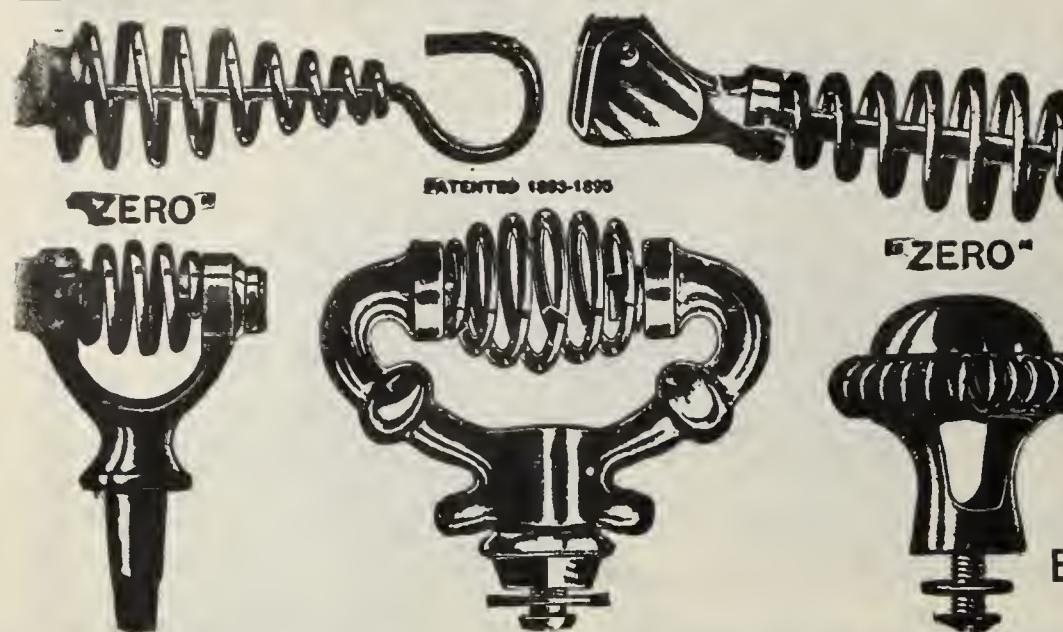
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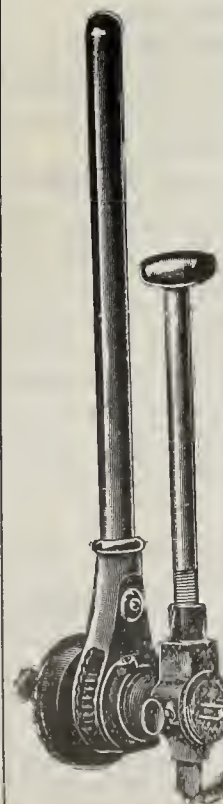
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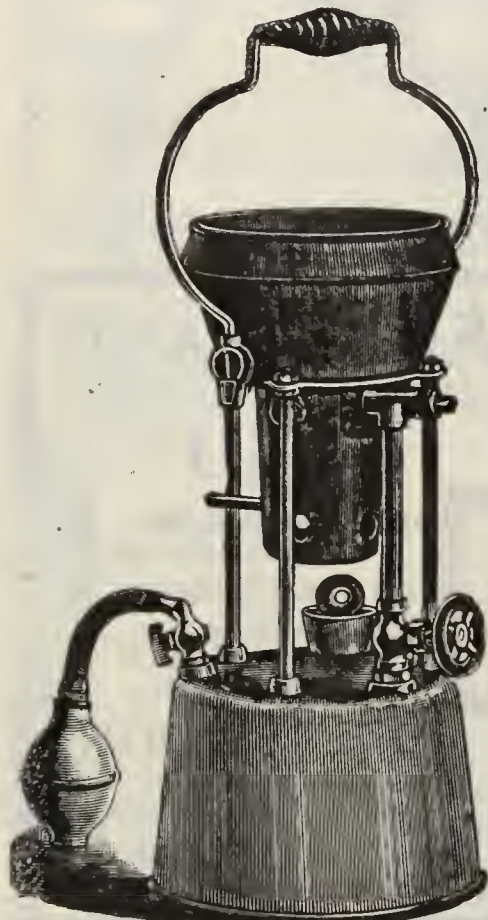
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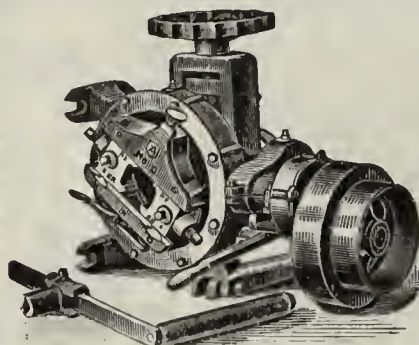
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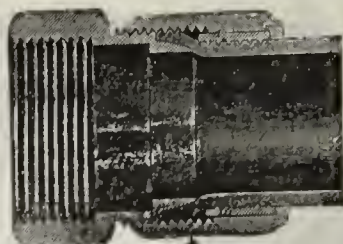
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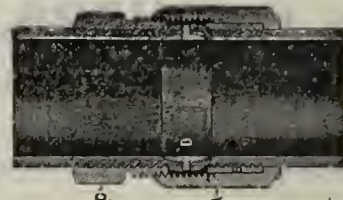
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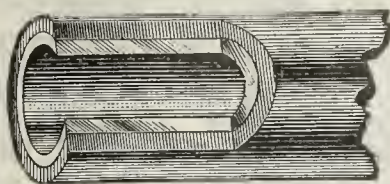
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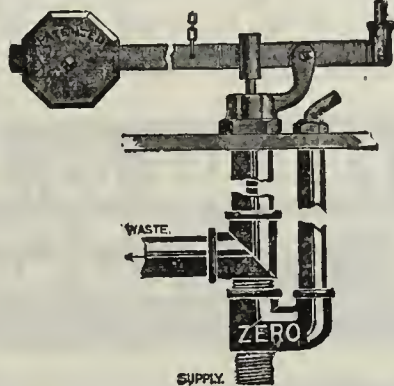


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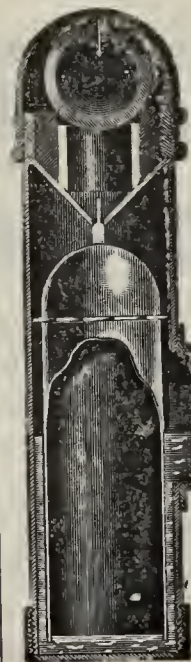
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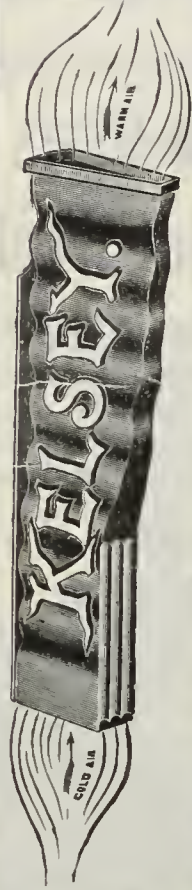
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A Step in the Right Direction.

The conference of prominent capitalists and labor leaders and others interested in the industrial question, held this week in New York City, under the auspices of the National Civic Federation, has resulted in a step which should be of far reaching importance. After two days of frank and admirably tolerant discussion of the relations between labor and capital, it was decided to appoint a committee of 36 members, representing, in equal numbers, the employers, the workmen and the general public. The *personnel* of this committee should secure for it the confidence of the public at large. Among its members are men who are widely known and respected in their different spheres. The chairman is Senator Marcus A. Hanna, and the vice-chairmen Oscar S. Straus, former Minister to Turkey, and President Samuel Gompers of the American Federation of Labor, and among the members are such men as ex-President Cleveland, Archbishop Ireland, Bishop Potter, President Eliot of Harvard, President Mitchell of the United Mine Workers, Grand Master Sargent of the Brotherhood of Locomotive Firemen; T. J. Shaffer, president of the Amalgamated Association of Iron, Steel and Tin Workers; Martin Fox, president of the National Iron Molders' Union; James O'Connell, president of the International Association of Machinists, and several other prominent labor leaders, with President Schwab of the United States Steel Corporation, S. R. Callaway of the American Locomotive Works; Charles A. Moore, president of the National Tool Company; William H. Pfahler of the Abram Cox Stove Company, Philadelphia, and other leading representatives of large employing corporations, representing capital. The committee, as formed, represents a very high standard of character and intelligence. The very fact of such a committee, which is designed to be practically a court of arbitration and conciliation, having been made possible is one of the most hopeful developments of modern times. While it is too much to expect that this step insures the introduction of an era of general industrial peace, it is without doubt a substantial step toward that end. It is assuredly a laudable attempt to do away with the industrial wars which have caused so much loss and suffering in the past. It is, moreover, a recognition of the fact that the interests of capital and labor are mutual, and that one cannot suffer serious injury without the other also being hurt. A most encouraging sign of growing betterment in the relations between capital and labor in this country was

the admirable spirit displayed in the discussions of the conference. There was manifest throughout a spirit of mutual forbearance and an evident desire to come to an understanding for the benefit of all which is highly gratifying and which promises much for the success of this latest effort toward industrial peace.

Splendid Gifts to Education.

The announcement of great gifts for charitable and educational purposes has become so common an occurrence in this fortunate country that something out of the ordinary in this line is now required to produce anything beyond a passing ripple of interest in the minds of the public at large. The report, published a few days ago, of the bestowal by Mrs. Stanford on the Leland Stanford, Jr., University of California of property valued at \$30,000,000, coupled with the further announcement of the offer of Andrew Carnegie to furnish a sum of \$10,000,000 for the establishment of an advanced educational institution at Washington, were sufficiently striking to attract intense interest and admiration. Mrs. Stanford's magnificent gift is probably the largest benefaction ever received at one time by any educational institution in the world. It is certainly the largest amount ever bestowed by a single individual. Moreover, this gift will appreciate in value as time goes on, as it consists largely of great tracts of land, much of which is still unimproved. Mr. Carnegie's gift is the latest and greatest of a long series of princely benefactions that have flowed from his hand into educational channels in the United States and Great Britain. While official details of this project are not yet made public, it is understood that Mr. Carnegie contemplates the establishment in the national capital of an institution of higher learning, to which graduates of existing colleges and scientific men will be admitted for further study and research, the Government co-operating by giving the students free access to the valuable materials contained in the various departmental buildings and public institutions of the capital. Thus the proposed new college would not rival, but supplement, the existing seats of learning. There appears to be ample room for an institution of this character, and its conception gives another proof of the far seeing sagacity with which Mr. Carnegie is employing his wealth for the benefit of mankind.

Higher Commercial Education.

The laying of the corner stone of the new High School of Commerce in New York City, last Saturday, is worthy of special notice, for it marks a distinctly new departure in connection with the public school system of the country. The necessity for a school of commerce, in which would be given the best and most advanced instruction in everything to help fit young men for a modern commercial career, has for some time been recognized by the business men of New York. Early last year the New York Chamber of Commerce, in connection with the authorities of Columbia University, formulated a plan for the creation of an institution of this kind, which, it is expected, will be developed in the building now being erected under the direction of the city Board of Educa-

tion. This body has heartily co-operated with the originators of the plan, and the new school is designed to be a branch of the public school system of the city. The liberality of the members of the Chamber of Commerce in providing a sum of \$500,000 has made possible the establishment of this school, which undoubtedly fills a recognized need. The rapid advance made by the United States in the past few years to the forefront of the world's commercial nations has created a call for a more highly trained class of young men, capable of coping with the complex requirements of modern business. The first city of the western hemisphere, and the second greatest in the world, is obviously the most fitting place in which a movement for the satisfying of this need should first take form. New York is to be congratulated upon showing herself to be abreast of the times in her educational facilities, and upon the further fact that the public sentiment of her citizens is becoming more and more sensible of the pressing educational needs of the young men now growing up within her borders. The establishment of the New York High School of Commerce is an event of significance to the commercial future of the entire country.

Dust from Heating Apparatus.

It has been the custom of men engaged in other lines of heating to refer to the hot air furnace system of heating as being especially dirty. This, however, is a practice only followed by those in the trade who look out for their own interests alone, and is seldom used by men of broader judgment, who recognize that all indirect systems of heating are likely to be the means of distributing more or less dust through a building. In order to avoid the dust that is necessarily gathered in with the fresh air supply, when it is taken from near the ground, the air supply is often taken at some distance above the ground. Frequently the supply for hot air furnaces is introduced through a duct which extends from 6 to 10 feet above the ground, covered by a hood and having an opening protected by means of wire screens against the entrance of birds, leaves and other foreign matter. In other instances, particularly in large cities, the fresh air supply for a heating system is taken from the roof level through a flue, that in appearance resembles in every way a chimney. This is quite a common custom when a fan system is used to force a large quantity of air through the system of warm air supply ducts. Failure to pay attention to the source of the air supply has brought some trouble to the custodians of the city hall at Atlantic City, N. J., where a blower system is in use. Apparently, there has been no complaint about the heating, but it is said that the hot air flues carry such volumes of dust into the different apartments that in an incredibly short space of time names can be written in the dust that settles on the furniture. The fresh air for the heating plant is drawn in from the police court yard, and the complaint of the dust that comes in with it will doubtless lead to some method of avoiding the annoyance.

Clean Air Supply.

Those who live in the East, where hard coal is quite generally used, and where there is a natural moisture in the atmosphere, do not have the same cause for complaint that is felt in some other sections regarding the dust that follows the use of any indirect system of heating. In many instances, however, those who have moved into sections where the air is not so clean make demands upon the heating contractor for some method of getting rid of the dust nuisance. As a result, heating men have perfected elaborate systems for washing the air by sprays of water and passing it through screens of

cheese cloth in order to arrest the dust. This can be done without difficulty where the attendant expense is not an objection. Those who use hot air furnaces, which bring into buildings large quantities of air, naturally look to furnacemen to furnish some device for checking the entrance of the dust which the fresh air naturally carries with it. In many cases the cold air supply ducts are equipped with frames to which cheese cloth is fastened, and the result is in every way satisfactory when the screens are sufficiently large not to hinder the air flow and the cloths are removed and cleansed with sufficient frequency. In some places it is found that in dry weather the cheese cloth requires changing not less than once in forty-eight hours, while in rainy weather the cloth may last for several days. When the cheese cloth screen is used in a cold air supply the heating is not infrequently hindered, owing to the fact that the meshes soon become filled with dust which prevents the free entrance of air to the furnace. Where a screen is used, the frame work, instead of being just large enough to enter the supply duct at the smallest cross section, in the same way as the damper, should be inserted into the duct diagonally, one of its dimensions being the depth of the cold air supply, with the other as many times the width as can conveniently be inserted. This method gives a larger surface of cheese cloth, and affords a better opportunity for air to enter the duct, while it enables it to continue its usefulness for a long period of time before it is clogged with dust. If those who furnish such filtering screens desire to avoid trouble, they must impress those who require them with the fact that the screens require a great amount of care, and that attention must be given to them frequently and regularly; otherwise the efficiency of the heating apparatus will be impaired. There is ample room for profit to be made from the sale of air filtering devices in connection with indirect heating systems, provided they are arranged in a common sense way, and the owners are made to thoroughly understand that frequent attention is the price of clean, fresh air.

Editorial Notes.

One of the noticeable results of the changed conditions which have characterized the market for the past year or two has been the almost complete elimination of the broker. The consolidation of manufacturing interests has had much to do with this. In former periods the broker frequently drove a thriving business by playing off one manufacturer against another, but of late, owing in part to the influence referred to and in part to the activity of business which has enabled manufacturers to market their goods without his aid, there has been comparatively little opportunity for his operations. The time, however, is apparently not far off when in almost every line competition will be as active as ever, and if there should also be a lessening of the demand, so that orders are eagerly sought after, there is little doubt that any means by which the merchants and manufacturers are brought closer together will be again in favor.

The value to a manufacturer of a reputation for the quality of his product finds many illustrations in the trade. It tends greatly to diminish the expense of marketing goods and serves as a safeguard against fluctuations in demand and price, which carry with them so many attendant uncertainties. A striking example of this is found in the case of a certain manufacturer of one item of hardware, who has no agents or salesmen, who never solicits business, and who asks nearly twice as much for his goods as any manufacturer of a similar appearing article. With this condi-

tion of things, and in spite of his lack of live, up to date business methods, his factory runs full all the time, thus illustrating the inherent strength of a good article, well made, well introduced and whose quality has never been allowed to deteriorate. To acquire such a position for their products is an ambition justifying painstaking and persistent efforts on the part of manufacturers.

THE PLUMBING SITUATION.

Since the Executive Committee of the National Association of Master Plumbers saw fit to abrogate the New York Conference Resolutions it is evident that arbitrary action on the part of many of the members and some local associations is to supplant the arbitration and conciliatory features of that agreement. Already the supply trade in different sections are receiving from some of the associations lists of their members, with the intimation that the sale of plumbing goods to others than these members will be considered a sufficient violation of the trade protection principle to warrant a withdrawal of their patronage. This is a step backward to the "sell to members only" resolution of the New Orleans convention, which caused the most serious difficulty in the plumbing trade in recent years. It is possible that this action is only made to influence the establishment of more satisfactory relations between the sellers and buyers of plumbing goods. We have been informed that consideration has already been given to the subject by the plumbers with this end in view. There is little room for doubt that the manufacturers will be willing to agree to anything that is reasonable so as to prevent any break that would interfere with trade.

John Martin, a former member of the London County Council, in an address recently delivered in New York, expressed the opinion that the Health Department of the city was poorly administered, and attributed the late epidemic of smallpox to this cause. He said: "There are in New York no special provisions for maintaining the personal cleanliness of the people, such as is possessed by every modern city of Europe. Take London, for instance. London is a poorer city than New York. Expenditures there are much less lavish than here. Yet it has no less than 37 great public baths open and four others under construction. London has spent \$6,375,000 on these baths. Disease germs are even more democratic than the American Constitution, and at present there are no facilities by which the people of the poorer districts can have the necessities of a cleanly life. There is now one public bath in Rivington street; but during the term of the next administration many more should be built."

"Progressive prosperity" is a term that well fits the condition of the State of Kansas in the past few years. The latest report of the Kansas State Agricultural Bureau shows that the present has been the best year that the farmers of Kansas have ever known. In spite of the partial failure of the corn crop, the aggregate value of farm products and live stock in the State in 1901 was no less than \$348,292,384, or \$17,000,000 more than last year, and \$45,000,000 greater than two years ago. The season's wheat crop is reckoned at 90,000,000 bushels, which is much larger than any previous wheat crop. While the corn crop was considerably smaller than the average, the falling off in amount was largely counterbalanced by the increase in market value. Corn is now worth about 50 cents a bushel on the farm.

Pittsburgh, by reason of its great number of blast furnaces, rolling mills and steel works, is the largest consumer of fire brick of any city in the world. Four counties of Pennsylvania produce the greatest part of the fire brick used, these being Clearfield, Cambria, Clarion and Clinton counties.

WESTERN STOVE PRICES ADVANCED.

The Western Association of Stove Manufacturers held a very important meeting in Chicago on Tuesday and Wednesday of the present week. The attendance on this occasion demonstrated the interest and enthusiasm of the members, as it is believed that every stove company belonging to the association was represented. The members interchanged views relative to the condition of affairs in the trade, and a sentiment speedily developed in favor of making an advance in prices to conform to the increased cost in the production of goods. It was therefore decided to take steps in this direction. The various manufacturers will immediately withdraw all prices outstanding on stoves and ranges, and it is understood that the new prices to be made will show quite an advance. This association usually takes the initiative in matters of this kind, as it covers a larger area and includes in its membership a greater part of the stove producing capacity of the country than any other of the local associations. It is therefore believed that the example thus set will be followed by manufacturers in other parts of the country.

A SALESMAN ON THE EASTERN STOVE SITUATION.

BY ITINERANT.

I was much surprised in reading over the correspondence about the stove association and their prices, &c., that the poor salesman was not flayed alive for all the shortcomings of the trade. He is the one that has generally been pitched upon for making all the mischief in it, and if he was eliminated and was told to "Go 'way back and sit down," all would be lovely. But in this scrap he is very well treated, much to my satisfaction.

At the same time I must admit that there are salesmen on the road who are unfit to have any responsibility regarding the trade, and whose reports are not very reliable about it. Not that they do not mean to do everything for the best interest of their firms, and really work in their way to that end, but they are not adapted to the work naturally and lack experience, and that careful training in business necessary to qualify them to go on the road.

It might be possible that some employers are not altogether able to distinguish and point out the best course for their salesmen to pursue, and, perhaps, are carried away with the idea that their goods will sell themselves. Consequently the salesman is but a small part of the show, and is paid accordingly.

As the matter now stands, better prices might have been obtained for stoves this year. The foundation had been made for it, but evidently some of the manufacturers had lost confidence in associations, and while they put on a virtuous front regarding holding prices they possibly did the best they could under the circumstances. But, in reality, they helped make the circumstances as much as any one else. If they are satisfied that they are better off going it alone, let them keep at it and time will tell the story.

So far as making money in the business is concerned (and I don't call patterns, plant and machinery money) the large concerns have just as hard a row to hoe as the small ones, but with this advantage: they have a prestige gained in the past as well as the present to sustain them.

It is generally conceded to be hardly the thing for a salesman to criticise the employers; but it would be a great advantage if we all could be put in the pattern shop, as it were, and then be sent out next season with the very latest and best ideas that can be had, and not with the least salaries that are worthy of the laborer. I am well aware that what comes from salesmen is received with more or less shrugging of the shoulders and elevating of the eyebrows, and with patronising and wise saws and histories of "what we used to do" and boasts of "what we will show them next year" by the man behind the desk. But, bless his dear heart, he spends most of the time with his salesmen talking through his hat.

I take it all in very respectfully, as it would be very nice to have it go his way; but long experience has taught me that there are others who will have something to say, and I will be one of the first to hear of it. And he will rave when he hears of it from me just the same as he does every season. Poor fellow, why can't he learn that the buyer, with his dollars in his pocket, has an arbitrary power, though we work him whenever we can?

The Canadian Stove Trade.

A number of the leading stove manufacturers of Canada met in Hamilton, Ont., last week to consider the question of prices. The outcome was a decision to allow prices to remain unchanged. Commenting upon this action, *Canadian Hardware* says: "In view of the high price of iron and steel, a reduction in figures was not to be expected. And from what we can learn the prices now ruling are fixed upon a moderate basis when cost of material and labor is taken into consideration."

"The turnover of stoves and furnaces in Canada during the season now nearly closing is easily the largest in the experience of the manufacturers of this country. The season of 1900 was considered an usually good one, but the present will doubtless, from what we can gather, exceed it by nearly 50 per cent."

"This increase entailed a heavy tax upon the manufacturers, for early in the season their stocks became so broken up and their orders so far behind that many of them were driven nearly to their wits' end."

"The demand for stoves and furnaces is now getting into small compass, as far as the manufacturers are concerned, although quite a respectable number of orders are still going out."

"What the next season will produce, as far as prices are concerned, cannot with certainty of course be foretold. At present, however, the conditions do not favor a lower range of values. The iron and steel markets continue in a very strong position. During the past month or two there have been quite substantial advances and some foundry grades of pig iron have advanced \$1 per ton within the last few weeks."

The Monarch Line for 1902.

There has always been a striking individuality about the Monarch vapor and oil stoves and asbestos ovens made by the Monarch Stove & Mfg. Company, Mansfield, Ohio, and for the coming campaign the company have greatly increased this important feature by incorporating in every pattern, from the most complete family range to the cheapest Low Junior, a number of special features said to be entirely original with themselves, so that Monarch agents will be greatly profited in pushing Monarch goods next year. The company say that their new catalogue is going to be the most beautiful edition ever issued by them. It will be ready for distribution on January 1.

They also inform the trade that they will be ably represented in New York City at 284-286 Pearl street; in Philadelphia, Pa., at 107 North Second street; in Pittsburgh, Pa., at 203 Wood street; in Chicago, Ill., at 67 Lake street; in St. Paul, Minn., at 191 Eagle street, and in Cincinnati, Ohio, at 419 Pike Building. Their representatives at each of the points named will carefully look after the interests of the company, and will serve the trade in the most satisfactory manner. The company promise the best sellers on the market, and only ask for an opportunity to show their line. Monarch goods, they say, do their own talking, and are "bread cast upon the waters."

SCHELLHAMMER & SON, Warren, Pa., state that they have had a continuous demand for their Pennsylvania Gas Hot Air Furnaces, not only in what is the regular season, but steadily throughout the year, up to the present time. They have been unable to supply all of the demand for these goods and are looking for good hot air furnacemen so as to enable them to increase their output.

CALCULATIONS FOR FURNACE WORK.

It is probable that by far the greater proportion of the furnace work done throughout the country is carried out without any systematic calculation. Experienced furnacemen find less need for rules and tables for their guidance than do men who are just taking up this branch of business. The need of tables and data that will enable men who do not possess a long experience to guide them in designing successful furnace plants is manifest, however, in the frequent inquiries for information of such a character. The various articles which have appeared in *The Metal Worker* from time to time, in which the existing proportions between different parts of a system have been presented, frequently have been the subject of comment by men who take a deep interest in the welfare of the furnace trade. The following extracts, taken from letters that have been received commenting on such articles, are presented for the information of our readers:

A Western house of standing in the trade say:

The practical usefulness of the tables published will undoubtedly be very great to agents and dealers who make a business of selling and installing furnaces. A good practical furnaceman who has had a wide range of experience in hot air furnace heating by the gravity system will usually be able to determine at a glance what will be required to heat the ordinary dwelling—that is, so far as concerns the sizes of pipes, registers, &c.—without any reference to tables. Tables, however, are very essential to the furnaceman who has not had experience in estimating and installing plants where peculiar or unusual conditions exist.

We should also be glad to see *The Metal Worker* take up the subject of ventilation in connection with furnace work. A great many furnacemen, not having a comprehensive experience, do not fully appreciate the fact that much depends upon a good and free circulation of air in the rooms to be heated, and do not know just how to go about exhausting air from rooms which are inclined to be tight and in which there is poor circulation.

The representative of another furnace concern of a wide experience makes the following comments on a recently published description of a furnace plant:

In going over this heating plant we find the sizes in the table presented agree with the sizes of pipes and registers we have found satisfactory in putting in furnaces. We believe that tables of that kind are of great service, and would enable many furnace dealers who know very little about installing a furnace properly to do satisfactory work. Our opinion is that the cold air inlet, especially when the air is taken from the inside of the building, should be equally as large as the warm air outlet. When the air is taken from the outside we advocate the use of an opening one-quarter smaller than the hot air outlets. We advocate the use of 10-inch pipes for the majority of rooms on the first floor, and 8-inch pipes for rooms of similar size on the second floor, with 12-inch pipes for the hall.

A Western manufacturer, who has made a specialty of furnace fittings, remarks:

The table presented in connection with the description of a furnace system, so far as the proportion between the hot air pipes and the work done is considered, corresponds quite closely with our experience in this field. Possibly, as time goes on, the furnace setter will be willing to be guided and governed more by tables of such a nature than has heretofore been found by us. We feel that such information will be productive of general good to the furnace trade.

An Eastern manufacturer states that a test is being made to demonstrate the value of a system of estimating furnace work, as the necessity for such a system that can be relied upon has been felt where it is impossible to send an expert furnaceman upon the ground to give the necessary assistance in laying out a piece of work.

ANNUAL MEETING AND BANQUET OF THE PENNSYLVANIA STOVE SALESMEN'S ASSOCIATION.

The fifth annual meeting and banquet of the Pennsylvania Stove Salesmen's Association was held in the Bourse banqueting rooms, Philadelphia, Pa., Wednesday evening, December 18. The attendance was the largest which has ever assembled at any of the previous meetings of the association. Among those present may be mentioned:

W. G. Withers, W. F. Habicht, H. G. Knight, H. Kircher, W. W. Farr and H. Borzell of F. M. Borden & Brother, Philadelphia.

Geo. L. Woodburn, H. V. Jennings, L. B. Campbell, Jos. Evans and D. Zelenski of Mahood & Co., Philadelphia.

Jno. R. McKnight, W. Hallowell and F. Neudorfer of the Mt. Penn Stove Company, Reading and Philadelphia.

F. Cavanaugh and A. Colquhoun of the Quakertown Stove Company, Quakertown and Philadelphia.

Harry McDowell, W. P. McConnor and L. Johnson of Liebrandt & McDowell Stove Company, Philadelphia.

Froing Riggs of C. C. Heath & Co., Baltimore and Philadelphia.

H. J. Morgan of the Lehigh Stove Company, Lehigh-ton, Pa.

E. F. Fager of the Keeley Stove Company, Columbia, Pa.

H. Dunlap of Isaac A. Sheppard & Co., Philadelphia, Pa.

Geo. W. Wagner of Floyd, Wells & Co., Royersford, Pa.

A. A. Miller of *The Metal Worker*, Philadelphia.

J. McLaughlin of *The Pattern Maker*, Philadelphia.

Fred. Sabin, J. G. Waters, E. Belson and Geo. W. Moss of Philadelphia, and last, but not least, Harvey Fueller of Reading, Pa., the man who has done much to make the association a success by his untiring efforts as toastmaster on various occasions.

The members and guests of the association entered the banquet room to the music of the "Tea Kettle Orchestra." The president, W. G. Withers, made the address of welcome and introduced, amid applause, Harvey Fueller of Reading, as toastmaster for the evening, after which the following banquet was served:

MENU.

Medium Salts.	A la Cross Piece.
Celery.	De Covers.
Olives.	Ze Lifter.
Radishes.	Ah Leg.
Consomme Windsor.	Vin Poker.
Filet of Sole au Vin Blanc.	Au Shaker.
Filet of Beef, Madeira Sauce.	Och Runner.
Peas.	Duplex Pattern.
Potatoes.	His Knobs.
Punch Yvette.	
Roast Squab en Casseroie.	Hot Air.
Lettuce Salad.	
Neapolitan Ice Cream.	
Cakes.	
Cigars.	

During the course of the banquet all present were called upon by the toastmaster for a "few remarks," "to make a speech," "sing a song," or "whistle a tune" and each in turn responded in a happy manner. The feature of the evening was a poetical creation by the vice-president, Geo. Woodburn, which follows:

A SALESMAN'S REVERIE.

The custom is with modern scribes who wish to pen their lines,
To seek some theme on which to build that happened bygone times;
But here events of future days our Muse will now relate,
And paint her fancy as she sees the model hero's fate.

One score years advance from now will dwell in a mansion grand
A gray haired Sire of stature great with wealth at his command;
The place at which his vast estate will rise in grandeur then
Will be among the Berkshire hills not far from Mountain Penn.

Within his palace will be rooms and many spacious halls,
With etchings of the greatest men to thus adorn the walls;
But set apart is a gorgeous space most private for the Sire,
Where he will rest in quiet thought before an open fire.

His leisure hours by cozy hearth reclining in a chair;
The clouds of smoke from his cigar that curl up in the air,
Are times that prompt fair Muse to tell a little prophesy,
Of what this Sire will oftentimes dream in silent reverie.

Quoth he: "This winter's night is cold; without is a raging storm,
Myself will draw unto the hearth that I may feel the warm,
And by this swift electric spark will light a fresh cigar,
And think of friends of ye olden times that wander near and far.

"This puff of smoke, the first is large—I see within its fold
The visage of a millionaire, his Fortune was never told;
His craft was that to fashion tin, a master of the art;
He bore the name of Sabin, and a hustler from the start.

"Just as the smoke is vanishing I behold another face;
Yes, two more forms appear to me of our Caucasian race;
Beneath the shady Beechwood together there they sit—
Friend Cavanaugh and A. Colquhoun, who lately made a Hit.

"Another cloud of smoke I draw and from my lips unfold,
And now I see a tourist of the Bengal regions old;
From his heated brow he wipes the sweat beneath a Rosemont Oak—
'Tis Wagoner, a man of wealth and financier of note.

"But what is this I now must view from out the passing cloud?
Two forms I see with Ulsters that around them form a shroud;
They are rivals for the heart and hand of some Columbian Charm;
'Tis Busick and his jolly smile, with Fager on his arm.

"A puff of smoke I again give vent, and this is what I see—
A Victor like some Hercules of very high degree;
He stands there like a statue, his face doth bear no scowl;
I recognize his features as a friend of mine, McDowell.

"Still another vision presents itself in that fading curl,
As if by Magic it seems to try a pennant to unfurl;
The noble face I sure must know, a chum in days of yore;
'Tis Dunlap whose lips now speak the word Excelsior.

"Once more a cloud of smoke released, the other seems to chase,
And in it is a personage with Sunshine on his face;
His life was one of wit and mirth, I never saw him sad,
'Tis Othello's son, brave Sheeler, a very jolly lad.

"Just here I'll knock the ashes and take a cleaner smoke—
Behold a face with details that no lips have ever spoke;
It seems that he is longing for a fragrant Lehigh Rose,
For Morgan was delighted when he wore one on his clothes.

"Now comes another vision great that one must surely heed—
I hear four voices singing, I see Reinking in the lead,
There's McKnight, Neudorfer, Hallowell—this song they sing
so free—
'Queen Esther, O Queen Esther, thou art all the world to me.'

"Again I'll draw some precious smoke, and what does it contain?
I see a hat of straw come first this cold night in the rain;
An Oxford student, I believe, with Black Jack up his sleeve,
'Tis Withers out for a promenade with Miss Bonnie Novelty.

"But what form is this so distant in that great cloud of smoke—
There seems to be a Stove Pipe hat, a full dress High Grade coat;
A diamond, too, in a white shirt front, a Dandy size and real,
'Tis Habicht, surnamed Chauncey, a great toaster at a meal.

"Another group is coming as the mists pass o'er my head—
There is Knight, the man of credits, no Idol life he led;
There is Farr, the hearty laughter, one wired me a Dispatch;
Borzell and Kercher, I see them too, they were a Handy match.

"Some ashes I again let fall and greater fumes expel—
There beneath a Canopy are two figures I know well;
One holds a pen like Homer and Coin the other shows;
They are Hopkins and my old friend Fox, whom everybody knows.

"Above me now is curling a swiftly flying mist.
Within its folds I see a saw and compass in a fist;
I hear a voice speak softly, he is telling a comic yarn;
'Tis McLaughlin, the pattern maker, he ne'er lived upon a farm.

"But who is this I next will view in the winding, passing curl,
A form no taller than a babe, a face like some sweet girl;
But larger now it seems to grow, yes, truly getting great.
'Tis one who claims a Grand Ideal, friend Riggs, of this good State.

"One more puff I now will take, my cigar is nearly gone;
Behold a New Flag up there waves in a hand both firm and strong,
There seem to be two visages, the last has a Classic smile;
'Tis Evans and friend Campbell, both are noblemen of style.

"But here comes one large, misty curl, it hovers o'er me now,
I see the features of a friend with an intellectual brow;
He seems to be of cast iron will, bricked up with honesty,
He holds a letter in his hand signed, 'Yours, D. P. Z.'

In this fume just passing now is presented to my view
A personage that sure will win some Valley Queen so true;
He stands there quite attentive, I believe he has a bride,
'Tis Jennings, that chum of mine, with Lady Irving at his side.

"But here at last my fire is out, this stump I'll throw away,
My quiet pastime now is o'er until some other day;
A pleasure oftentimes brings me to think of ye old times,
When with the boys I used to tour through many sunny climes.

"These visages that I have seen were friends of mine, not foes,
Who traveled by rail, by boat, by 'bus o'er country selling stoves;
Through many hamlets they have passed, and every dealer know—
I really hope they've had success since twenty years ago."

Just here the silent reverie of gray haired Sire must end,
And Muse will now his name disclose and to all a message send—
Once a commercial tourist, but a man of wealth that day,
This Sire will then be Fueller, the scribe of P. S. A.

'Tis a forethought for the future, not of the ages past.
This prophecy is now made known and such predictions cast
That members of S. S. A. of P. around this festive board
In closer union may be drawn while present times afford.

The future lies before us, boys, the past has fled by,
The present now within our grasp this knot should closer tie,
And when in one score years to come we may in mansions be,
Our happiest pastimes will be spent in A Salesman's Reverie.

The retiring president, Mr. Withers, was presented on behalf of the members of the association, with an artistic reproduction of a "Southern Pickaninny," Mr. Campbell making the presentation speech. H. Dunlap entertained the members with several recitations, Geo. W. Moss told "How he was a speech maker," and W. F. Habicht, by special request, was asked to "tell the story of his life." "Shop talk" was tabooed throughout the evening.

The business session of the association was short, consisting of the election of officers and a discussion of plans for the enlargement of the association. It was suggested that the secretary place himself in communication with the various employers of stove salesmen, requesting the names of their men.

The following officers were then elected for the ensuing year:

President, George Woodburn.

Vice-President, H. Dunlap.

Secretary, W. Hallowell.

Treasurer, Fred. Sabiu.

A vote of thanks was tendered the retiring officers, and after drinking toasts to the absent ones, "sweethearts and wives" and the President of the United States, the most successful meeting and banquet of the Pennsylvania Stove Salesmen's Association came to a close.

Award of Prizes in "Acorn Bread" Contest.

Rathbone, Sard & Co., Aurora, Ill., have announced the list of winners of prizes in the "Acorn Bread" competition for 1901. The prizes were awarded at Aurora on Thursday, December 5, by a committee of three ladies appointed for the purpose. Samples of "Acorn Bread," numbered from 1 to 473, were submitted to the committee from the States of Illinois, Indiana, Ohio, Wisconsin, Minnesota, South Dakota, Nebraska and Kansas. The committee examined all of the samples of bread submitted for their inspection, and unanimously decided, under the rules of the contest, that the prizes for 1901 should be awarded as follows:

FIRST PRIZE.—Sample No. 147, baked in the National Acorn range by Mrs. E. Sieckenberger of Chicago.

SECOND PRIZE.—Sample No. 198, baked in the Bessemer Acorn steel range by Rosa A. De Groodt of Excelsior, Minn.

THIRD PRIZE.—Sample No. 219, baked in the Fern Acorn wood cooking stove by Mrs. T. H. Crumpacker of De Kalb, Mo.

Special mention, with award of Acorn gold charms, was given the following:

No. 403, Mrs. Lizzie Hamm, Shelby, Mo.

No. 169, Mrs. J. H. Pederson, Milwaukee, Wis.

No. 9, Mrs. L. Minton, Chicago.

No. 133, Mary E. Whitmer, Milford Center, Ohio.

No. 50, Mrs. Amos Ladwig, Hawkeye, Iowa.

No. 79, Mrs. L. M. Murphy, Cody, Neb.

No. 8, Mrs. John Meyer, Joliet, Ill.

No. 111, Mrs. Byron Cook, Keokuk, Iowa.

No. 194, Mrs. Martin K. Anderson, Minneapolis, Minn.

Charles W. Goodnough.

Chas. W. Goodnough, who has been the sales manager of the Pittsburgh Stove & Range Company since their organization, tendered his resignation some weeks ago, to take effect on the 16th inst. Mr. Goodnough resigned his position to become the Pittsburgh manager for the Prizer-Painter Stove & Heater Company of Reading, Pa., who will open a branch office and warehouse in Pittsburgh for the purpose of supplying the trade in Western Pennsylvania, Ohio, West Virginia and Western Maryland. Prior to the consolidation of the stove interests in Pittsburgh Mr. Goodnough was a member of the old established firm of De Haven & Co., and largely assisted in promoting the Cinderella stoves and ranges, which are well known throughout the country.

ODD PLATES.

THE SHERIDAN STOVE MFG. COMPANY of Quincy, Ill., are meeting with a very gratifying demand for their goods. The capacity of the works is so taxed at present that President J. L. Sheridan expresses the belief that it will soon have to be increased. Cyrus W. Eaton and J. C. Shanks of Denver, Col., were in the city early in December and closed a deal with the Sheridan Company for over 3000 Stoves, which as soon as completed are to be shipped to Denver. We understand that this is the largest single order for Stoves that the company have ever received.

THE JAPANNING plant of the Eclipse Stove Company of Mansfield, Ohio, had a narrow escape from serious damage a couple of weeks ago. A stick of dynamite was found in one of the japanning ovens, having attached to it several matches and connected with a fuse, the evident intention of some one being to await a suitable opportunity to set it off. Fortunately the attempt was not successful, for had it been there is no telling the amount of damage that would have been done.

THE EQUITABLE FURNACE COMPANY of New York City were incorporated this week with a capital stock of \$50,000.

THE H. ADLER COMPANY, Pittsburgh, Pa., are sending to the trade in the interest of the Acme Gas Stoves and Ovens a calendar which is a handsome bit of color work. The calendar tablets are quite small, and attached to one corner, the feature of the card being the portrait of a Persian beauty.

THE WALKER & PRATT MFG. COMPANY, Boston, Mass., are sending to the trade leaflets adapted for advertising purposes showing cuts of their Home Crawford and Charm Crawford Ranges. The different cuts are designed to attract attention to special features of these Ranges, such as the easily removed nickel rails, method of manipulating the grate, the use of the simmering cover, the regulating damper, the oven heat indicator, the method of cleaning the flues and the square oven with two racks. All of these special cuts are designated by a number, and those in the Stove trade who desire an advertising cut can secure the size and style they want by including the number of the cut in their request for one.

THE PITTSBURGH STOVE & RANGE COMPANY of Pittsburgh have sold to the American Locomotive Company the property and buildings formerly owned by De Haven & Co., Limited, Stove makers, and located on Preble avenue, in Allegheny. The De Haven plant was taken over when the Pittsburgh Stove & Range Company were organized about two years ago.

C. W. ALDRICH, Minneapolis, Minn., announces to the trade that he has accepted an engagement with the Home Stove Company, manufacturers of Model Stoves and Ranges, Indianapolis, Ind. Mr. Aldrich will travel through the Northwest, and his territory will extend down through Northern Missouri, including Kansas City. Mr. Aldrich is well known in the Stove and Hardware trade of the Northwest, having been prominent in the organization of retail Hardware associations in several States. His interest in the work of such organizations has been recognized by invitations from various associations to read papers before them. The Home Stove Company have reached the eighth year of their existence and have in that time built up a large business in their specialties. They now manufacture a line of 100 different sizes of Steel and Cast Ranges and Cooks, and over 120 different sizes of Oak Stoves, Hot Blasts and Airtights.

THE KEYSTONE MFG. COMPANY of McKeesport, Pa., made their first heat last week, and are now running steadily in the manufacture of Stoves, Gas Ranges, Stove Fittings and other specialties. The company are composed of William E. Hartman, James L. Delong, Charles F. Delong, Charles T. Moore, W. F. McCrea and Ralph Harris. The plant consists of a foundry building, 60 x 100 feet in size, and a fitting, machine and polishing shop, 30 x 212 feet, and two stories in height.

THE S. OBERMAYER COMPANY, Cincinnati, Ohio, manufacturers of Foundry Facings and Supplies, are operating their plants night and day. The company have just completed the first shipment of stock to their new warehouse in Pittsburgh, and are now carrying in stock there a complete line of equipment for brass and iron foundries.

THE CHATTANOOGA STOVE COMPANY, Chattanooga, Tenn., report a very satisfactory season, the demand for their goods having been unusually active. The company's plant will be closed down shortly for about two weeks for the annual stock taking and the carrying out of necessary repairs.

THE Quick Meal Gasoline Stoves, the manufacturers—the Ringen Stove Company, St. Louis, Mo.—advise us, are commanding a great and constantly increasing sale on the strength of their name, quality and merit. The name "Quick Meal" has become known everywhere during the past 20 years, and is regarded as a strong guarantee of excellence. In material, workmanship and construction alike the Quick Meal goods are of the highest class, which accounts for their popularity.

RATHBONE, SARD & Co. of Aurora, Ill., and Albany, N. Y., have been distributing among the trade a circular calling attention to the merits of the Acorn Steel Ranges, and to the fact that they differ from Ranges of other makes. Attention is directed to some of the good features of these Ranges, which the dealer is requested to note in connection with Stove Book 5, sent out by the company some time ago. The manufacturers also refer to the Acorn plan for newspaper advertising as being different from others, and which, when used in connection with their newest steel specialties, seldom fails of satisfactory results. The company furnish a complete variety of illustrated newspaper advertisements devoted to the stove business, and more especially to the patterns which their customers are selling. The electrotypes are of uniform size and by the use of them with the name of the dealer added the cost of advertising in the average weekly newspaper is reduced to a minimum.

THE plant of the Round Oak Stove Works, at Dowagiac, Mich., shut down in all departments on Saturday afternoon, December 7, for the purpose of taking the annual inventory and making necessary repairs. The shut down will also be utilized for the installation of a device in the boiler room, which, it is expected, will effect a great saving in the cost of fuel. The new device is calculated to render the consumption of slack possible in the furnaces, in which case coal will be displaced. General Manager Lee states that work will be resumed with a full force in the early part of January, by which time the inventory and improvements will have been completed.

THE MICHIGAN STOVE COMPANY, on Monday, December 16, filed with the Secretary of State, at Lansing, a renewal of corporate existence for 30 years, and notice of increase of stock from \$300,000 to \$3,000,000. An officer of the company is reported by a Detroit paper to have stated that the increase had long been anticipated, but being a close corporation it was necessary to wait for the expiration of the charter. We understand that the company have enjoyed a very prosperous year.

THE TWIN BURNER STOVE COMPANY, 206-210 South Seventeenth street, St. Louis, Mo., have their line of Twin Burner Gasoline and Oil Stoves ready for the new year, and announce to the trade that their catalogue is ready for distribution. The Twin Burner line includes all styles of Stoves, from the four-burner of cabinet form, with oven burner at the side, to the low Juniors. The company's new No. 480 Stove can be used either for gasoline or coal oil.

THE SIMPSON STOVE MFG. COMPANY of Pittsburgh, Pa., have recently filed articles of incorporation at Harrisburg, the capital stock being placed at \$50,000. The incorporation of the company and the increase in the capital stock are said to be due to the growth of business and the intention to materially increase the capacity of the plant. A building covering an area of about 200 x 300 feet will be erected on the 4 acres which the company have secured near Canonsburg, and more than 100 hands will be employed. The officers of the new com-

pany are: H. P. Simpson, president; S. Munnell, Jr., secretary and treasurer, and George A. Simpson, superintendent.

Pennsylvania Retail Hardware Dealers' Association.

The Pennsylvania Retail Hardware Dealers' Association was organized at a meeting held at the Monongahela House, Pittsburgh, on the 12th inst. The entire proceedings were characterized by a unity of purpose and resolution, and the testimony was clear that an organization should be established for mutual protection. About 35 merchants were in attendance.

The meeting was held under the auspices of the Monongahela Valley Retail Hardware Dealers' Association and was called to order by President G. L. Moore of Brownsville, who stated the object of the meeting, closing his remarks with a brief history of the sectional organization. The forenoon session was taken up chiefly with short discussions on existing conditions and proposed remedies. On reassembling in the afternoon M. L. Corey, secretary of the National Retail Hardware Dealers' Association, gave an interesting and very instructive talk on the Indiana State Association, the difficulties it encountered, how some of them were overcome, while others were still unsolved. He urged a united effort to bring about a solution of many difficult problems that beset the trade, giving some illustrations of marvelous results wrought by a steadfast and united effort. He pointed out that organization unites socially, a friendly feeling being thus engendered, which dissipates the deadly competition that often arises through misunderstanding. At the close of his remarks one purpose seemed to animate those present, and that was to establish an organization that all might reap the benefits that have come so freely to those already in the fold. Some discussion arose as to the name of the new association. As the representation was from the Western end of the State it was thought the name of Western Pennsylvania Retail Hardware Dealers' Association would be appropriate. Others thought the scope of the organization should embrace the entire State, and the following resolutions were adopted:

Resolved, That this association be known as the Pennsylvania Retail Hardware Dealers' Association, and that its membership include retail hardware dealers exclusively.

Resolved, That we affiliate with the National Retail Hardware Dealers' Association.

The following officers were elected:

G. L. Moore, president, Brownsville.
Geo. J. Rudolph, vice-president, Pittsburgh.
J. F. Frye, secretary, Charleroi.
B. A. Maggini, treasurer, Braddock.

EXECUTIVE COMMITTEE.

A. Q. Casselberry, Pittsburgh.
E. E. Lyon, Greensburg.
C. N. Savage, California.
B. A. Maggini, Braddock.
C. O. Shroyer, Dawson.

The association then adjourned to meet on the second Wednesday in February at the Monongahela House, Pittsburgh. This date is, however, subject to change.

It is gratifying thus to note that the retail hardware merchants of the great State of Pennsylvania have swung into line for self defense by means of an association, and it is hoped that the present membership may be largely augmented before the next meeting in February. Any information desired in regard to the association will be cheerfully furnished by Mr. Frye, the secretary.

Southwestern Kansas and Oklahoma Implement and Hardware Dealers' Association.

The second annual meeting of the Southwestern Kansas and Oklahoma Implement and Hardware Dealers' Association was held in Wichita, Kan., on the 4th and 5th inst. in the council chamber of the City Hall. S. H. Myton of Winfield, Kan., occupied the chair, and a large number of members were in attendance. Among the papers read at the convention were those by B. B. Breed of the Studebaker Bros. Mfg. Company, South Bend, Ind., on "The Relations of the Dealer and Mar-

manufacturer from a Traveling Man's Standpoint," and by D. W. Blaine of Pratt, Kan., on "The Supply and Demand for Prison Binder Twine, from a Dealer's Standpoint." The following officers were elected for the ensuing year: President, Charles Watson, Pond Creek, Ok.; vice-presidents, John Baumstark, Harper, Kan.; S. H. Myton, Winfield, Kan. Directors: F. M. Spangler, Mulhall, Ok.; W. H. Hubbard, Conway Springs, Kan.; Henry Noble, Alva, Ok.

The Willis Sap Spout.

The Hunting-Weekes Company, Watertown, N. Y., are offering the sap spout herewith illustrated. It is made in one piece of malleable iron, tinned. It is pro-

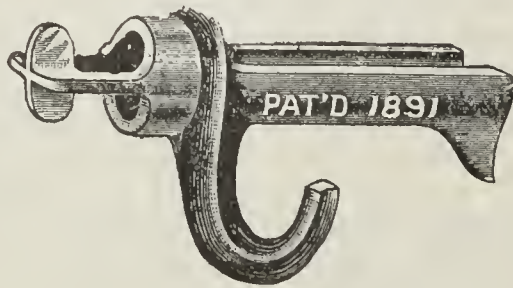


Fig. 1.—The Willis Sap Spout, Open Top.

vided with anchoring lugs to safely retain the spout in the tree when the sap freezes in the hole during extremely cold weather, and to prevent it being drawn

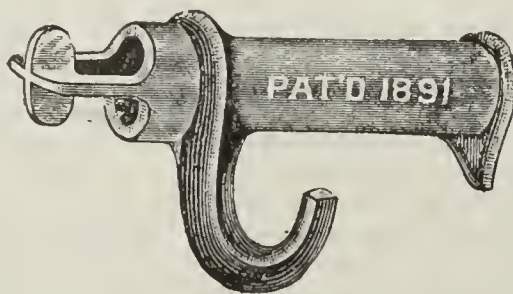


Fig. 2.—The Willis Sap Spout, Closed Top.

out by the weight of the bucket, or leaking when the sap begins to thaw. The manufacturers state that the spout cannot break, that it does not clog, and that it does not obstruct the flow of sap from the vertical pores of the tree. The spouts are made open and closed tops, and to fit a hole bored with a 1/2-inch bit.

Stove and Hardware Dealers.

THE FRANKLIN GALVANIZED WARE MFG. COMPANY, Franklin, Ind., have lately been incorporated with the following officers: P. W. Payne, president; D. A. Forsyth, vice-president; W. B. Jennings, secretary; A. F. Curtis, treasurer, and W. H. Unversaw, manager. The office, factory and warehouse of the company are nearing completion. Nearly all their machinery has been contracted for, and they will begin installing it about December 23. They purpose to manufacture nearly all kinds of Galvanized and Japanned Ware from the sheets—that is, Galvanized Steel Tanks, Tubs, Buckets, Half Bushel Measures and various other articles, including the filling of special orders for heavy Galvanized Steel Tanks. The company expect to have their plant ready for operation about January 15, 1902.

THE Executive Committee of the North Dakota Retail Hardware Association have decided to hold the next, the fifth, annual meeting of the association in Fargo, February 19 and 20, 1902.

THE next annual convention of the Illinois Retail Hardware Dealers' Association will be held at Decatur on February 12 and 13.

MCDOWELL & GRAVES are successors to McDowell & Pettigrew in the wholesale and retail Hardware, Stove, Farm Implement and Buggy and Wagon business in Cahool, Mo.

RIPON HARDWARE COMPANY, Ripon, Wis., have been organized and have bought the stock of Shelf and Heavy Hardware, Stoves, Tinware, Sporting Goods, Furnaces, &c., formerly carried by Charles Cowan.

H. J. STUCHBERY has lately opened up a new stock of Hardware, Stoves, Sporting Goods and furniture in Ringwood, Oklahoma.

JONES, BYRD & Co. are a new Hardware concern at Limestone, Tenn., handling in addition to Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Cement, Lime, &c.

J. E. FARRELL, Hyde Park, Mass., has recently taken possession of his new building. His line comprises Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Seeds, &c. Mr. Farrell reports a satisfactory business, with a promising outlook for the future.

KOLF HARDWARE COMPANY, Hobart, Oklahoma, have recently embarked in business at that point, handling both Shelf and Heavy Hardware, Stoves and Agricultural Implements.

FRISBEE & SEXTON have succeeded Sharp & Frisbee in the Hardware and Stove business in Long Beach, Cal.

WATERMAN HARDWARE COMPANY, Geo. Waterman, president and treasurer, Albany, N. Y., have lately opened a new store at 141 South Pearl street. They are carrying a full line of Hardware, Tools, Kitchen Utensils, &c.

W. F. HUNT has purchased the Spore Steel Fence Post Company's factory in Newark, N. Y., and will convert it into a manufacturing plant for Anti-Rust Tinware.

THE NATIONAL ENAMELING & STAMPING COMPANY, New York, are announcing a large and complete line of Railroad Milk Cans for 1902. The company began the manufacture of these goods a few years ago and are now among the largest producers in the United States. They advise us that they have experienced a remarkable growth in this particular line of business. Dealers who are interested in these goods would do well to write the company for the little 40-page booklet which they have gotten out in the interests of their Railroad Milk Cans, Factory Cans and Dairy Supplies, of which they manufacture a complete line.

An Effort to Abolish Strikes.

The conference between representatives of capital and labor, under the auspices of the National Civic Federation, as announced in our last week's issue, took place on Monday and Tuesday in the rooms of the Board of Trade and Transportation in New York City. The meeting was attended by about 200 people, including the heads of several of the largest industrial organizations, representing many millions of capital, and most of the prominent leaders of labor organizations, representing hundreds of thousands of workingmen, also a number of prominent persons representing the general public.

Oscar S. Straus, ex-Minister to Turkey, called the meeting to order and introduced the first speaker, Bishop Potter of New York, who congratulated those present upon the gathering, than which he believed nothing more important had ever happened in the history of the great social and industrial problem. The bringing together of the great forces of industrial activity in a comity of intercourse and conference was, in his judgment, the largest step in the direction of a solution of the problem of capital and labor that had ever yet been taken.

Senator Hanna of Ohio followed and, in the course of his remarks, made the statement that the grandest thing that could be accomplished in this country would be the successful movement to bring capital and labor into closer relations of confidence and reliance. The Senator said that he would rather have the credit of bringing about such a consummation than be President of the United States.

Among the subsequent speakers were Archbishop Ire-

land of St. Paul; John Phillips, secretary of the Hatters' Union; Representative Donnelly of the Bricklayers' Union, James Ryan of the Photo-Engravers' Union and Marcus Marks of the Clothing Makers' Union, all of whom took the line that disputes between men in their trades and their employers could in nearly all cases be settled by arbitration.

William H. Pfahler of Philadelphia, president of the National Association of Stove Manufacturers, made one of the most telling addresses of the conference in describing the experience of the association formed by the employers in the stove trade. Mr. Pfahler said:

We organized an association at that time—and it was a great many years ago—for defense. We began that association to defend ourselves against the aggressions of the Iron Molders' Union. We worked along those lines two or three years, fighting each issue as it rose. But we very soon learned that our point was wrong; that our approach to the question was wrong, and we changed the policy of that association to be one of negotiation, to be an association which should, from our standpoint, show the men who were in our employ the condition of affairs from their standpoint, learn the condition of their lives and industries, and to co-operate upon a line which would produce the best results.

There has not been a strike in the stove industry. Why? We have approached that subject through representatives of each body, and if there is anything valuable in this country to-day it is the representative system, so long as these representatives are well qualified men to carry out their purposes.

President Charles M. Schwab of the United States Steel Corporation, another of the speakers, expressed his opposition to labor unions as at present organized. In giving his reasons for this opinion Mr. Schwab said:

That labor unions will never succeed, as trusts never succeeded, by attempts to restrict the output or attempts to put any restriction upon trade in general.

These great trusts that are formed in a business way to control the output of any commodity, to raise its price, they all have failed and all will fail. A trust will succeed where there are motives of consolidation for economy's sake and for regulating trade generally.

And the laborer must take a similar position. Labor must not restrict the output. That is a fundamental principle. And I am sorry to say that every labor organization with which I have had experience in the past has had as its foundation the restriction of the output.

He added:

I should not be opposed to organized labor if organized on correct principles. It is a mistaken idea to suppose that manufacturers are opposed to labor organizations, *per se*. They are opposed to them as they do exist; not to labor organizations who keep their contracts, not to labor organizations who will not restrict the output, not to labor organizations who have the good of the trade they represent at heart.

At the meeting on Tuesday a motion was adopted for the appointment of a standing committee to take the subject of labor troubles under further consideration, and formulate a plan to obviate strikes in the future. This committee to be composed of 12 representatives of organized capital, 12 of organized labor and 12 to represent the general public. The following is the committee, as appointed by Chairman Straus:

ON BEHALF OF THE PUBLIC.

Grover Cleveland.
Cornelius N. Bliss.
Charles Francis Adams.
Archbishop John Ireland.
Bishop Henry C. Potter.
Charles W. Eliot, president Harvard University.
Franklin MacVeagh, Chicago.
James H. Eckels.
John J. McCook.
John G. Milburn, Buffalo.
Charles J. Bonaparte, Baltimore.
Oscar S. Straus.
Ralph M. Easley.

REPRESENTATIVES OF ORGANIZED LABOR.

Samuel Gompers, president of the American Federation of Labor.
John Mitchell, president of the United Mine Workers.
F. P. Sargent, Grand Master of the Brotherhood of Locomotive Firemen.
T. J. Shaffer, president of the Amalgamated Association of Iron, Steel and Tin Workers.
James Duncan, secretary of the Granite Cutters' Association.
Daniel J. Keefe, president of the International Association of Longshoremen.
Martin Fox, president of the National Iron Molders' Union.

James E. Lynch, president of the International Typographical Union.

Edward E. Clarke, Grand Conductor, Brotherhood of Railway Conductors.

Henry White, secretary of the Garment Workers of America.

Walter MacArthur, editor of the *Coast Seaman's Journal*, San Francisco.

James O'Connell, president of the International Association of Machinists.

REPRESENTATIVE EMPLOYERS.

Senator Marcus A. Hanna, Cleveland.

Charles M. Schwab, president United States Steel Corporation.

S. R. Callaway, American Locomotive Works.

Charles Moore, president National Tool Company.

J. D. Rockefeller, Jr.

H. H. Vreeland, Metropolitan Street Railway Company.

Lewis Nixon, Crescent Shipyard, Elizabethport, N. J.

James A. Chambers, president American Glass Company, Pittsburgh, Pa.

William H. Pfahler, president National Association Stove Manufacturers, Philadelphia, Pa.

E. P. Ripley, president Atchison, Topeka & Santa Fé Railway.

Marcus M. Marks, president of National Association Clothing Manufacturers.

J. Kruttschnitt, president of Southern Pacific Railway Company.

A subcommittee was appointed to consider and formulate suggestions for plan and scope of this permanent committee. The general sentiment of the meeting on both Monday and Tuesday seemed to be that a peaceable way out of labor difficulties could always be found by amicable and free discussion of the questions at issue between employers and their employees, and that these ends could be best served by the existence of a standing committee in which both sides should be represented.

Among the speakers on Tuesday was E. D. Durand of Washington, secretary of the National Industrial Commission, who cordially indorsed the plan of a committee of arbitration and conciliation and characterized it as the most practical method of obviating labor troubles. Grand Master Sargent of the Locomotive Firemen also spoke in a similar vein, from the point of view of labor, and was followed by several other labor leaders, as well as Lewis Nixon, the shipbuilder, of Elizabethport, N. J. President Mitchell of the Mine Workers said that he had never seen a strike which could not have been averted if the employers and men had met in conference, and a similar opinion was expressed by Samuel Gompers.

On Wednesday a meeting of the standing committee was held, at which Senator Hanna was elected chairman, Samuel Gompers and Oscar S. Straus, vice-chairmen; Charles A. Moore, treasurer, and Ralph M. Easley, secretary. A further meeting of the general committee will be held in the latter part of January, when by-laws will be adopted and the general plan of action will be decided upon.

A LARGE CARD, to which a calendar is attached, which is being distributed among the trade by the Vance Boiler Works of Geneva, N. Y., manufacturers of the Vance Boilers for steam and hot water heating, presents a realistic scene in a boiler makers' shop. In the foreground are the bellows and forge for heating the rivets, while just beyond is a large boiler shell with the workmen engaged in riveting the parts together. The picture is in black and red. The glare of the fire has been used with a very striking effect to light up the whole scene.

THE UNITED STATES RADIATOR COMPANY, Dunkirk, N. Y., are sending to the trade an announcement of the opening of a branch office at room 68 of the Corcoran Building, Washington, D. C., in charge of M. E. Danforth, who is well known to the trade in that vicinity. The new office has been established in order that the interests of the trade in that territory may be more carefully and promptly cared for.

THE PHILADELPHIA STEAM HEATING COMPANY of Philadelphia, Pa., have taken out permits for installing new steam heating plants to the amount of \$31,000, the largest of which is a \$19,000 contract for the new theater which is being erected by B. F. Keith, on Chestnut street, above Eleventh street.

European Heating Boilers.

BY CHARLES F. HAUSS.

IN THREE PARTS. FIRST HALF OF PART THREE.

[Continued from *The Metal Worker*, December 7, 1901.]

The Crosius boiler, shown in Figs. 95, 96 and 97, is made for steam only in two models and in 13 sizes, with 40 to 178 square feet of fire surface. It has about twice the water contained in the boiler just mentioned, but holds much less coke, averaging only 1 pound of coke per square foot of surface. It is also rated to supply 3000 heat units or 10 square feet of steam radiation per hour. Fig. 97 shows the arrangement of the safety pipe, also

the flow and return headers. A particular feature of this boiler is the flow header, which, for water, is a plain hollow tube, while in the steam header an inner tube is introduced with openings in the top through which the steam enters the main pipe at the front, as indicated by the arrows. The function of this pipe is to prevent entrained water from being carried with the steam. The fire travel is shown by the arrows, going up on each side in the flues marked 1 into the upper flues 2, thence back and down on each side, rising again in the center, where it finds its exit in the smoke flue, making it a reversible flue boiler.

Figs. 103 to 105 show the latest creation, known as the Rapid boiler, having, for steam, what are termed American trimmings, as shown in Fig. 103. In Fig. 104 is

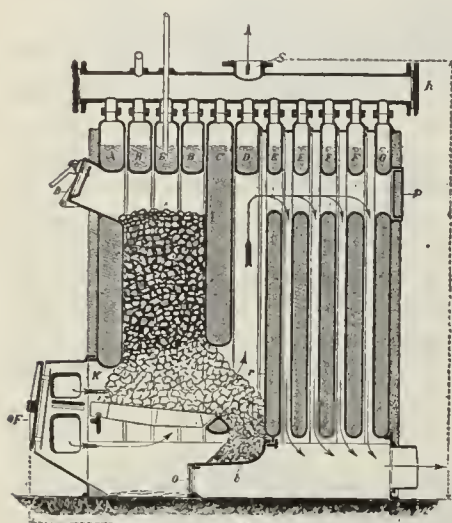


Fig. 95.

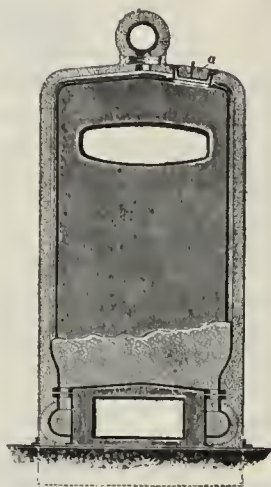


Fig. 96.

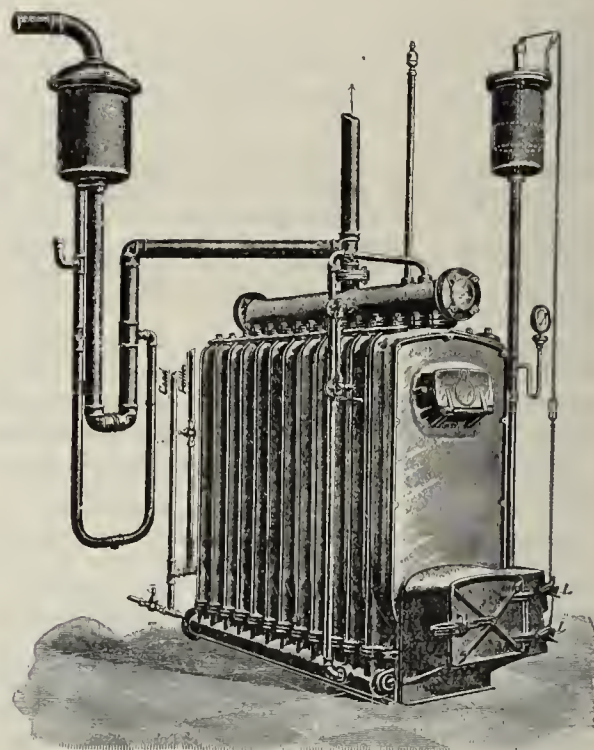


Fig. 97.

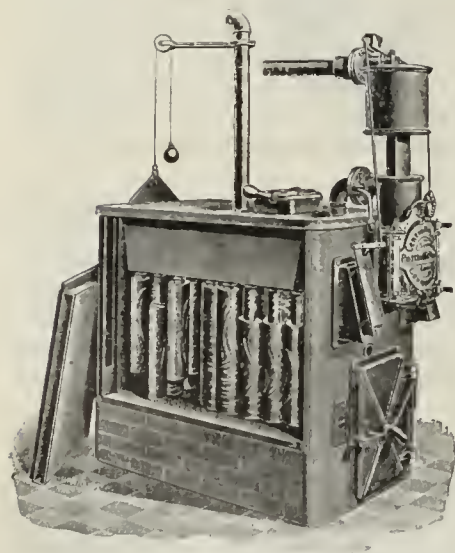


Fig. 98.

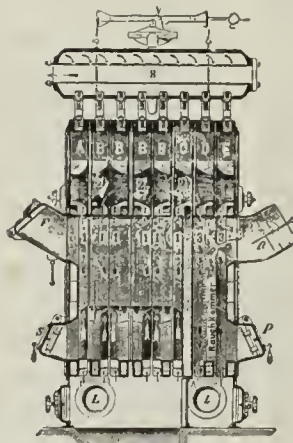


Fig. 99.

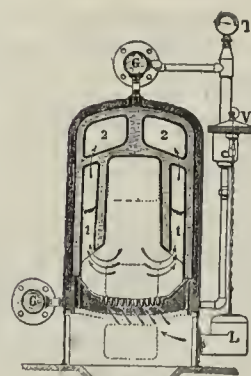


Fig. 100.

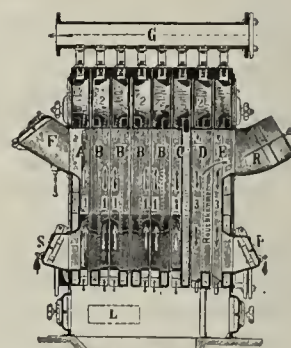


Fig. 101.

EUROPEAN HEATING BOILERS.

the float damper regulator; in fact, it is a German boiler "trimmed."

Fig. 98 represents a cast iron drop tube boiler made by the Luisenhütte, and which is a correct copy of the Furman boiler so well known in America. The double cylinder arrangement on the front is the automatic regulator and safety pipe connection combined.

Figs. 99 to 102 show the Bolze boiler, with a large central magazine, water grate and a separate wrought iron base forming the ash pit. It is made with from 4 to 18 sections, increasing two sections at a time, the sections being $4\frac{1}{2}$ inches thick, with from 64 to 230 square feet of fire surface. The boiler is rated to supply 2600 heat units or 14 square feet of water radiation and 9 square feet of steam radiation per square foot of fire surface per hour, and has about the same proportions of water contained and fuel capacity as the Strehla boiler, shown in Figs. 89 to 94. The sections in this boiler are connected with wrought iron nipples and lock nuts to

shown the same boiler for water, without the steam dome, and in Fig. 105 is indicated its construction. It is made in two patterns and 17 sizes, with 38 to 179 square feet of fire surface, and is rated to the limit—namely, 20 square feet of water radiation or 13 square feet of steam radiation per square foot of fire surface. It has about 3 pounds of water, and holds about $1\frac{1}{2}$ pounds of coke per square foot of surface. The sections are joined together in the crudest manner with gaskets and bolts.

Figs. 106 and 107 show the new Bolze round boiler, which is surely a freak, being a wrought iron pipe coil with a heavy cast iron shell cast around it, the excuse for its existence being that it supplies a long felt want in the shape of a round fire pot cast iron boiler that will not crack; also that it has a large fuel reservoir. It is made in two sizes only, rated to supply 4800 and 8000 heat units per hour. Surely the desire to avoid risk in the foundry must have overcome the inventor's desire for efficiency in this case.

In Figs. 108 and 109 are presented the Nitchke portable magazine return flue boiler, made of wrought iron, in which the products pass up through the inner tubes and down the outer ones into the smoke chamber surrounding the ash pit. This is a very efficient, substantial boiler.
(To be continued.)

WHAT IS WRONG ?

In conversation with a plumber and stove dealer, a correspondent finds what may be considered unusual conditions. A review of the plumber's business career and the position in which he finds himself at the present is given by the correspondent as follows without comment:

When he started business four or five years ago the

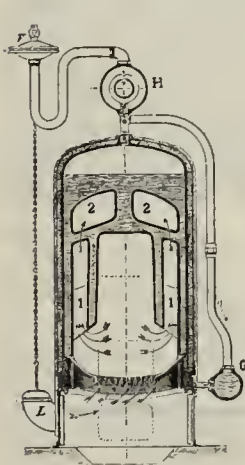


Fig. 102.

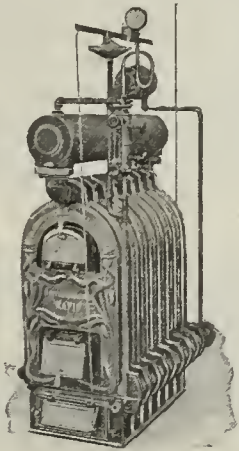


Fig. 103.

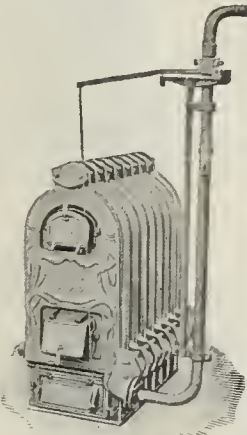


Fig. 104.

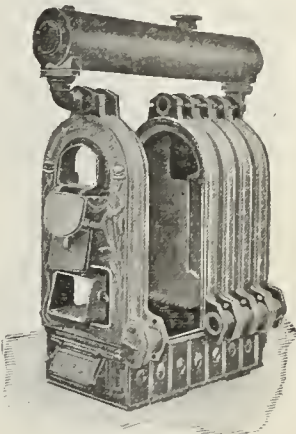


Fig. 105.

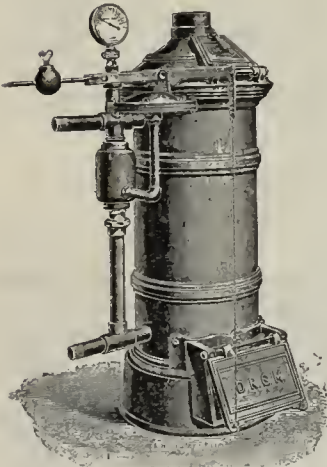


Fig. 106.



Fig. 107.

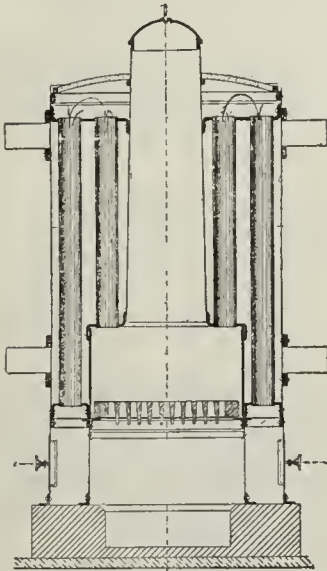


Fig. 108.

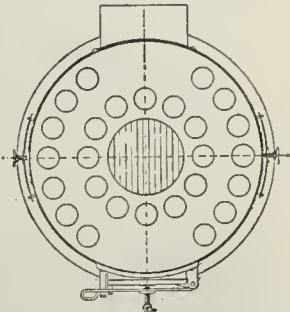


Fig. 109.

EUROPEAN HEATING BOILERS.

plumber began in a small way with a shop only. He worked himself when necessary and also superintended jobs. The venture proved successful and the business paid well.

Within two or three years the town had grown in size to between 5000 and 6000 inhabitants, and he thought he could branch out with advantage to himself, especially as there were two other shops of the same general character which carried stoves and kitchen ware. He had also got to a point where he felt that he could afford to let his workman do all the manual labor, while he devoted his time to superintending work.

He had an idea, too, that he might gain prestige by putting himself more prominently before the public. So he rented a nice store, with show windows, in a good location, and put in a stock of stoves, granite and tin ware, &c.

While he carried a well assorted and attractive line of goods, competition was sharp. In addition to the other stove stores a department store sold stoves, kitchen ware, furniture and house furnishing goods, and

their prices on the line he carried were lower than he could well afford to meet. In addition all the dry goods and grocery stores carried some tinware, so that when a customer wanted a tea kettle, wash boiler, pans, &c., they were in a position to supply their requirements. Many stoves, too, had to be charged or sold on the instalment plan, with some accompanying loss. As the result, he found that the profits from goods sold barely paid rent, fuel, lights, insurance, &c., and the wages of a clerk to attend to the store while the proprietor was out.

He feels that it would be a retrograde step to abandon the stove part of the business, and that it might injure his standing in the community. His shop business continues to bring him satisfactory returns, but he is getting nothing for the risk and additional burden of carry-

ing a stock of goods. He says if there is any consolation in the thought, he has good grounds for believing that he is getting returns from his store equal to any of his competitors, but he expresses regret at ever having put in a stock of goods, and believes that he would have been better off if he had confined himself to plumbing, and had not yielded to the temptation of branching out.

THE UNION LEAD & OIL COMPANY, who are half owners in the Federal Lead Company, recently organized under the laws of New Jersey with a capital stock of \$10,000,000, are making a purchase of real estate and erecting suitable factories in different parts of the country. Homer Wise, president of the company, whose offices are at 32 Nassau street, New York, has recently, it is said, completed negotiations for the absorption of the Raymond Lead Company of Chicago. It is also stated that a new White Lead manufacturing plant is contemplated at Alton, Ill., near the smelter of the Federal Lead Company.

KEEPING TRACK OF JOBS.

C. F. Hamblin, St. Augustine, Fla., has a system of keeping track of jobs, in connection with which a time book, daybook, contract book and ledger are used. One of the office force keeps track of every workman's location, each workman making a verbal report to the clerk when any piece of work, large or small, is started, and another report when the work is finished. These reports are entered on the time book when made. A sample page of the time book is shown in the accompanying cut. At least an entire page is used for each day, and more if necessary.

The left hand column of the page contains the names of the workmen. The second column is headed "store," and is used for the time of workmen employed in or about the store. The other columns are devoted to the name of the party or job on which the workman is employed. The figures at the left of each column denote when work was begun, and those to the right show when it was completed. Each morning a clerk checks the time book for the preceding day, and posts each workman's time to his account in the ledger. The page to which it is posted is marked in red ink on the time page immediately below the record of time. The time on each

exposure of a large amount of heating surface with which the air passing through the apparatus can come in contact. The steam generator enables rooms at a considerable distance from the heater to be heated by means of direct or indirect steam radiators. The first few pages are devoted to a description of the heater, grate and ash pit section and general construction. The remaining 30 pages each bear a half-tone engraving of some fine residence or institution in which the Demarest improved heater has been used, testimonial letters speaking of the satisfaction derived accompanying each of the engravings.

Utilizing Waste Heat from Steam Mains.

The construction of the tunnels used for the steam pipes running from the central heating plant at the University of Chicago involves novel features. The problem is to carry steam underground without losing too much heat. The common practice is to wrap the pipes with a nonconducting substance to confine the heat within, but it is figured that even under favorable conditions some heat is lost. Engineer Houghton has solved the problem by a system of subways surrounded by air chambers and

Date	Store	Mr. Dodge	Albman	Franklin	Boyd	Donnell	Stinson	F. Noble	Trimmer	H. Co.	Donnell	Dickson	Abraham
Dec. 12.													
J. Smith	2 ¹⁵	2 ³⁰	8 ⁰⁰	10 ¹⁵							10 ¹⁵	11 ¹⁵	2 ³⁰
H. Adams			8 ⁰⁰	5 ⁴⁵									5 ⁴⁵
F. Brown					8 ⁰⁰	11 ¹⁵						10 ¹⁵	5 ³⁰
C. Bacon			now on work										
H. Drew							8 ⁰⁰	1 ¹⁵					
R. Hall	8 ⁰⁰	9 ⁰⁰						9 ⁰⁰	5 ³³				
			8 ⁰⁰										

Keeping Track of Jobs.—Sample Page of Time Book.

job is also entered on a page in the contract book devoted to the job. By the time book it can be seen at any time during the day how any workman is employed, and inside of a minute it can be as readily seen how many men were at work on any certain date, as well as where each and every one was at any particular time.

When a workman or helper needs material he gets it from a clerk, who waits on him in the same way as he would on any other customer. The clerk makes an entry of the material in the daybook, one page of which is devoted to each job. The material is also entered on the contract book and charged to the job on which it is used. Material taken out for any job and not used is credited on the contract book. When a job is completed the items of labor and material are extended and footed up, so that the results of each contract can be readily seen. The amount of the charge is then posted from the contract book to the ledger account of the individual for whom the work is done.

The Demarest Heaters.

The Innes & Demarest Heating Company, Binghamton, N. Y., are sending to the trade a handsome catalogue devoted to the Demarest steam and warm air heating apparatus, which they say has been tested from Maine to Minnesota with universal satisfaction. The heater is adapted for either portable or brick setting, and consists of a porcupine fire pot with a steel plate combustion chamber, in which a steam generator is located. Exit from this combustion chamber to the smoke pipe is found through a down draft drum or radiator, so that the construction provides for a long fire travel and the

concrete, and he has the advantage of having his pipes exposed in a tunnel where they may be easily got at.

There is a main tunnel running under Ellis avenue to the campus, where it divides into three branches. This tunnel measures 10 x 5 feet inside. It contains five 12-inch, two 8-inch and two 6-inch steam mains, besides a number of cables for carrying electric light and power. On each side it has a double brick wall, with a 2-inch air space between the two sections. The base is concrete, and conduits for the electric cables are formed by rows of brick, which are covered by a wooden floor. The top is insulated by an air space, a layer of asbestos and a concrete covering. It was necessary to have these tunnels near the surface of the ground because of the water struck at a depth of 6 or 7 feet.

As there would be a poor chance for vegetation to grow above the tunnels, on account of the dryness, and heat, the idea was conceived of so locating them that they could be covered with artificial stone walks and roadways, which was done. It is believed the escaping heat from the tunnels will keep the walks free from snow during the winter and dispense with the services of the shovel brigade.

A SUIT was brought in Paris, France, by a tenant against his landlord, after the latter had refused to start the heating apparatus on October 23, when the thermometer was standing at the freezing point. The landlord declined to provide heat before November 1, on the ground that the latter date accorded to custom. The Court decided that the thermometer and not the almanac must be consulted in regard to the time fires must be started for warming apartments rented with heat.

NEW YORK MASTER PLUMBERS' ENTERTAINMENT.

The annual entertainment and ball of the Association of Master Plumbers of the City of New York, Manhattan branch, was held in the Lexington Opera House, Fifty-eighth street, New York, on Wednesday evening. The entertainment was in charge of the following committee: Milton Schnaier, chairman; B. F. Donohoe, treasurer; T. J. McCormack, secretary, and John Boyd, S. L. Malcolm, T. J. Tuomey, J. F. Kelly, T. J. Cummins, J. W. O'Brien, C. Tucker, T. F. McCaul, G. F. McQuillen, E. J. Brady, Alex Bryant, Isaac J. Brown and T. A. Hill. The opera house was nearly filled with members of the association and their ladies, with a good representation of the wholesale plumbing trade of New York City and Brooklyn.

The entertainment opened with a variety programme of nine numbers, the overture being rendered by Professor William Bayne's Sixty-ninth Regiment Band. The early part of the evening was spent in enjoying this entertainment and in visiting among the various boxes and floor seats. The social side was a prominent feature of the entertainment, and the color effect lent by the costumes of the ladies was very pleasing.

The last number of the programme was an illustrated song.

The Committee of Arrangements had had pictures made of ex-National President Samuel L. Malcolm, president of the Manhattan branch; A. H. Brown, president of the Greater New York Association; I. J. Brown, the well-known plumbing statesman; Jonas A. Rossman, and the Chesterfield of the plumbing trade, Thomas J. Tuomey. The presentation of these pictures was accompanied by appropriate remarks as they appeared. At the close of this part of the programme the floor was cleared for dancing, and the grand promenade was formed to the music by Bayne's Band. After the promenade began the usual stir, caused by filling in of the dancing programmes, to be quieted by the first strains of a seductive waltz. Dancing was continued until a late hour.

Among those present were Alderman McCaul, Joseph McCann of the Missouri and Pacific Railroad, C. A. Walsh, William Kirchof, Jonas A. Rossman, John Yule, E. J. Riordan, John Renehan and Frank Reynolds.

NEW RADIATOR COMPANY.

Papers are being prepared for the incorporation of the New York Radiator Company, to manufacture steam and hot water radiators in Utica, N. Y. The new company will be conducted in conjunction with the Hart & Crouse Company, the principal stockholders in the new company being connected with that concern. Those who are chiefly interested are: Frederick T. Proctor, H. Gilbert Hart, Charles B. Rogers, president of the First National Bank of Utica, and Joseph Rudd. A plot of 8 acres has been secured in East Utica, situated on Turner street, adjoining the Erie Canal, and convenient to the Broad street railroad switch.

Designs for the buildings of the new plant are now being drawn by the superintendent of the Hart & Crouse Company. All of the buildings will be of brick construction, the largest being the foundry. There will also be a large machine shop and warehouse. It is expected that the plant will be completed and in full operation early in July. The machinery for the equipment of the plant will be of the most approved modern type for turning out a large amount of work, accurately finished. Designs for a very handsome and complete line of steam and hot water radiators have already been selected, and the patterns are in course of completion.

The company will have the advantage of experienced management, having a thorough acquaintance with the trade. The same men will be at its head that have made a success of the Hart & Crouse Company, who have established a large trade for the Royal line of steam and hot water heaters and hot air furnaces. Their customers should insure the sale of a large proportion of the output of the new plant. It is expected that the plant will have a capacity to enable the company to put upon the market a larger number of square feet of radiation than was ever put on the market by any new concern in its first year of business.

Vanderman's Improved Roof Connection for Soil Pipe.

In the accompanying illustrations we show a new roof fitting for plumbers' use, manufactured by the Vanderman Heating & Plumbing Company of Willimantic, Conn. In Fig. 1 a general view of the fitting is presented, and in Fig. 2 a sectional view, from which it can be seen that a perfectly air tight connection can be effected, which allows free expansion and contraction of the pipe passing through it. It is claimed that this fitting makes a better finish on the roof, and, extending 12 inches above and 15 inches below the roof, there is no danger of leakage. It is also pointed out that no tools are required on a



Fig. 1.—General View.

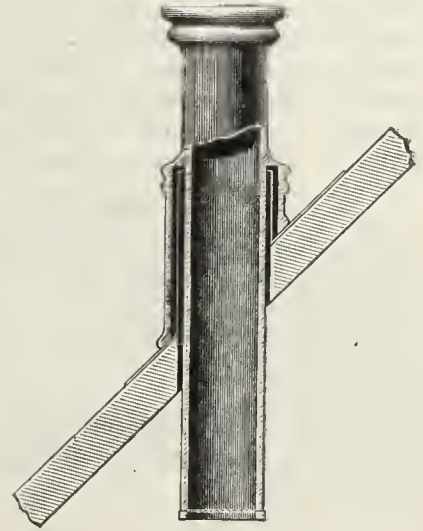


Fig. 2.—Sectional View.

Vanderman's Improved Roof Connection for Soil Pipes.

roof for making the joints. These fittings are made for 2, 3, 4, 5 and 6 inch pipe, only in the medium weight, which can be used for either standard or extra heavy soil pipe.

Spokane Galvanized Wire Pipe.

An interesting method of manufacturing wooden water pipe has been developed by the Spokane Galvanized Wire Pipe Company, Spokane, Wash. This pipe is manufactured of kiln dried Oregon fir. The staves are dressed to true mathematical segments, which when assembled form a perfect circle. The pipe is made in standard 8-foot lengths, around which galvanized wire is spirally wound. In winding the wire is paid out under tension adapted to the size of the pipe and wire. The spacing of the wire, as well as its size, is adapted to the pressure under which the pipe is to serve. Thus the higher the pressure the larger the wire used and the closer it is wound. The staves are well dressed, making the inside of the pipe smooth. The wire is double galvanized to insure its longevity. The wood is thoroughly kiln dried to evaporate the sap. The pipe is thoroughly boiled in asphalt to more completely protect it from destructive agencies. Each joint of the pipe is made with a socket and spigot end, enabling joints to be easily made. It is stated that the only tools necessary in joining the pipe are wooden mauls to drive the joints together. The manufacturers claim that the life of this pipe is from 15 to 20 years. It is further claimed that if the water passing through the pipe should freeze the pipe will not burst as the wire imbeds itself in the wood, the expansion being taken up by the wooden staves. This pipe is finding a large field of operations in sections of the West requiring a cheap pipe for irrigation purposes.

O. CHAN WELLS, 26 Cortlandt street, New York, who has represented the United States Tube & Iron Company, has added the Monongahela Tube Company of Pennsylvania to the list of mills of which he is an agent. He is quoting prices for Boiler Tubes, both steel and charcoal iron, for this company. They make a complete line of Lap Welded Boiler Tubes from 1 to 16 inches in diameter. They also make extra sizes and thicknesses if specifications are furnished.

The Lake Erie Specialty Mfg. Company.

The Lake Erie Specialty Mfg. Company, Geneva, Ohio, have lately been organized under the laws of that State. The following are the officers of the concern: T. H. Russell, president; E. M. Converse, vice-president; V. L. Atkins, secretary; C. I. Chamberlain, treasurer, and J. H. Lyons, superintendent. The company will manufacture a line of plumbers' brass goods, including Lyons' special patented goods. At present they are ready to quote prices on and supply promptly Fuller bath cocks, Fuller basin cocks, stop and waste cocks, sill cocks and compression work of all kinds. As fast as competent men can be secured and more machinery can be installed they will increase the line on this class of goods and bathroom fixtures in general, so as to make it as complete as any. We are advised that the company have a well equipped plant, are amply financed, and that the business is managed by experienced men, who are intending to produce a high grade of goods.

New York City Notes.

The most costly plumbing job in the city will be that of the apartment house being built by the Astors at Fifty-fifth street and Fifth avenue, which will probably amount to around \$150,000. The contract has not yet been given out.

Geo. Essig of 37 Hancock place has the plumbing contract for an apartment at Manhattan avenue and 116th street.

Manhattan branch presented to the family of the late M. J. McDermott a handsomely engrossed set of resolutions.

One of the features of the enjoyable entertainment given last Wednesday evening was the violin solo given by Milton Schnaier, who was also chairman of the Committee of Arrangements.

The remarks made at the entertainment in connection with the picture of ex-National President Malcolm of his habit of looking up soldiers' monuments in convention cities will be appreciated by all who know him.

The many friends of William Young of 32 East Fifty-ninth street will be glad to learn that he is getting better of an injury to his knee received from a fall, and which confined him to the house for some weeks.

The plumbing shop of Murphy Bros., at 175 East Eighty-second street, was totally burned out last week. Pierce Murphy, the senior partner, has for many years been foreman for Milton Schnaier & Co., and only lately went into business for himself. He is now located at Lexington avenue and Eighty-second street.

If plans to be figured on show anything of work to be done, next year will be a very busy one. There are many model tenements to be built and a number of high-class elevator apartments on the upper West Side, together with downtown business buildings. Every plumber doing this class of work is busy figuring on plans for the same.

Plans have just been filed for an apartment house at Lenox avenue and 112th street under the new Tenement House law. This is being watched with a great deal of interest by the building trade, for, if successful, it will revive interest in this class of buildings, no plans for which have been filed since July 1.

The New York State Commissioner of Public Safety, D. W. Peck, has reprimanded a plumber of Syracuse, N. Y., for violating the plumbing rules and regulations. He states that the public welfare demands that plumbing and sanitary rules be strictly enforced and lived up to.

Officers of Manhattan Branch Master Plumbers' Association.

The Manhattan Branch of the Greater New York Master Plumbers' Association held their annual meeting on Tuesday evening, December 17, and elected the following officers for 1902:

- President, Andrew H. Brown.
- Vice-President, B. F. Donohoe.
- Treasurer, Philip Brady.
- Recording Secretary, T. A. Hill.
- Financial Secretary, A. W. Reynolds.
- Sergeant-at-Arms, T. J. McCormack.
- Marshall, Wm. Kirchhof.
- Trustees: T. J. Tuomey, Chairman; Alex. Bryant, E. J. Brady, M. J. O'Brien, T. J. Cummins.

The following were elected as representatives in the Greater New York Master Plumbers' Association: B. F. Donohoe, John Renahan, T. F. McCaul, T. J. McCormack, G. F. McQuillen, T. F. Gaynor, W. J. McDermott, T. J. Cummins, J. T. Coyle, Milton Schnaier, J. F. Kelly, Frank Reynolds, E. J. Brady, J. A. Rossman, J. W. O'Brien, Isaac J. Brown, Philip Brady, Isaac O. Shumway, A. E. Jackson.

The P. & S. S. League.

Higher scores and closer contests characterized the bowling on Monday night in the Plumbing and Steam Supply League tournament in New York. The following teams each won and lost a game: John Simmons Company, Behrer & Co. and Ronalds & Johnson Company, Brooklyn. The John Simmons Company team lost their first game and broke their series of continuous victories. W. T. Gilmour made 198, the high score of the evening. On Thursday night the John Simmons Company team lost another game, and the Thomas G. Knight team lost two, while the Crane Company team wound up the bowling for the year with two victories, to which S. Marx contributed a score of 204 in one game. The next meeting of the teams will occur on January 6.

The Standing of the Teams at the Close of the Year.

Teams.	Won.	Lost.	Indi-		Name.
			Team	vidual	
			score.	score.	
John Simmons Company	3	2	779	196	W. A. Presby.
Behrer & Co.	6	2	827	198	M. Behrer.
Crane Company	6	2	798	210	A. E. Good.
Ronalds & Johnson Company, Brooklyn	7	3	827	198	W. T. Gilmour.
Ronalds & Johnson Company, New York	5	3	702	189	W. S. Gibbs.
Salesmen	3	3	742	222	Henry Stein.
F. N. Du Bois & Co.	6	4	776	202	C. W. Frean.
Central Foundry Company	6	4	701	199	J. S. Dibley.
Dlmock & Fink Company	4	4	772	194	F. Hogenauer.
C. S. Locke & Smith	4	4	693	193	C. A. Blanchard.
H. P. Read Lead Works	4	5	689	196	C. V. Driggs.
John A. Murray	2	6	676	189	G. W. Tilton.
Thomas G. Knight	2	6	675	182	E. E. Benas.
Fred. Adee & Co.	2	8	695	175	A. B. Kolyer.
E. F. Keating	0	8	601	185	C. J. McCarthy.

Heating and Plumbing Notes.

The semiannual meeting of the Master Steam and Hot Water Fitters' Association of the State of New York was held at the Yates Hotel, Syracuse, on December 10. The principal feature of the meeting was a discussion of the petition to be presented to Congress calling upon the United States Government to have the power, heating and ventilating plants and other portions of building contracts let by separate contracts instead of by the present system, which allows the contracts to be awarded to one general contractor, who then has the privilege of subletting the contracts. Action was also taken to advocate a similar plan for the public works of New York State.

JACQUES LAFERME, the Paris representative of the Standard Mfg. Company of Pittsburgh, is now in this country on a business visit.

The iron mills of the Republic Iron & Steel Company, at Muncie, Ind., are having steam boilers set over the puddling furnaces for the purpose of saving fuel. At one mill three of these boilers are used, and two others are

being built. At another mill there are three such combined puddling furnaces and steam generating plants; two other furnaces are being reconstructed so that the heat from them may be utilized for generating steam in boilers.

THE BURLEY HEATER COMPANY, Tyrone, Pa., have had a very prosperous season. In addition to their manufacture of Hot Water Boilers, the company have now begun to make Iron Castings of all descriptions.

A FIRE, doing damage to the extent of \$400, visited the plumbing establishment of the Colman & McGar Company, Bridgeport, Conn., last week. The loss is entirely covered by insurance.

A PLUMBING supply company, with a capital of \$30,000, are about to erect a new factory at Quincy, Ill., for the manufacture of Plumbing Goods.

THE ROYAL HEATING COMPANY of San Francisco, Cal., recently installed a No. 47 Prince Royal Combination Warm Air and Hot Water Heater in the residence of a customer, to heat six rooms and halls on the first floor and seven chambers and bathrooms on the second floor. One of the hot air pipes extended 45 feet for heating two of the rooms. The customer states that the work has been in every way satisfactory. The company also installed a No. 30 Wood Royal Furnace for heating a church at Visalia, and a No. 56 Royal Air Furnace was used by them for heating a church at Fresno. In these churches, it is stated that thermometers placed in the four corners of the buildings showed the variation in temperature to be less than 1 degree.

W. E. DONNELLY, Chicopee Falls, Mass., has the contract for the plumbing in the factory of the Knit Goods Specialty Company.

A HOUSE, in which Carey & Son, Rochester, N. Y., were doing the plumbing, was broken into recently and \$30 worth of plumbing tools were stolen.

EDWARD MAHL of Hartford, Conn., is plumbing two houses for W. H. Scoville. He has just completed plumbing contracts for T. F. Brabazon and A. W. North, and is now engaged on the work in the Wethersfield Avenue School House, in his city.

THE State House Commission of Louisiana have let the contract for a steam heating system for the new Capitol building to F. G. Butler of Greenville, at his bid of \$26,500.

C. L. GRANT of Hartford, Conn., has secured the contract for installing a refrigerating plant in the new brewery at Allington, Conn.

WALTER G. RUGGLES has sent in his resignation to the International Pump Company, and will open an office at 85 Water street, Reading, Mass., as a representative of the National Pipe Bending Company of New Haven, Conn.

F. I. LESSARD & Co. are now established in new quarters at 40 Hampden street, Springfield, Mass., where they are well equipped for doing a plumbing, gas fitting and steam and hot water heating business. They have the contract for plumbing a building for the Shaker colony, at Alfred, Maine.

WATROUS & BARKER, 131 Dwight street, Springfield, Mass., heating contractors and metal workers, report considerable activity in the demand for furnace work in their territory.

J. H. MAKIN, Springvale, Maine, has secured the contract for the plumbing and heating apparatus for the new Sanford High School Building, in that town.

W. E. FRYE of Crestline, Ohio, has opened a plumbing shop at the corner of Center and Prospect streets, Marion, Ohio.

CONTRACTS for additional heating apparatus at the city buildings at New Britain, Conn., have been awarded to J. B. Weiant and George Rapelye.

THE DETROIT HEATING & LIGHTING COMPANY, Detroit, Mich., are sending to the trade a catalogue 12 x 16 inches in size, consisting of 18 plate pages, illustrated with half-tone engravings, showing a great variety of Gas Lighting Fixtures, Chandeliers, Side Brackets and Globes. The catalogue is accompanied by order blanks arranged so as to avoid the possibility of error in ordering.

HENRY W. GRELLE, a plumber, of 2207 St. Louis street, New Orleans, La., has invented an air propeller to be used on small sailing boats. By the use of a small model he has demonstrated that boats using a propeller can run as easily in the face of the wind as with it. The propeller may be revolved by a small engine or dynamo.

MARVIN W. KINGSLEY, for 28 years superintendent of the Cleveland, Ohio, Water Works Department, has opened offices in the Rose Building, that city, and will devote his attention to civil and hydraulic engineering pertaining to the erection of water works plants, &c.

THE KENNEDY & SULLIVAN MFG. COMPANY, Holyoke, Mass., steam and hot water heating, tinning, plumbing, &c., have leased the building adjoining their plant and will build an addition to the Brass foundry 25 feet long and two additions for storage purposes. Most of the additional room will be used for the manufacture of Mr. Sullivan's patent Anti-Water Hammer Hydrant, which they are about to put on the market, and for the manufacture of Brass Valves.

THOMAS DEVLIN & SON, Philadelphia, Pa., manufacturers of Malleable Iron Fittings, Castings, &c., are negotiating with the local improvement association of Burlington, N. J., for the removal of their plant to that place. Though nothing definite has as yet been decided, there is a possibility that Burlington will get the works, as the firm are at present very much in need of more room.

THE LUNKENHEIMER COMPANY, Cincinnati, Ohio, makers of Steam Fitters' and Brass and Iron Steam Supplies, are well along in the construction of their main building at Fairmount, Cincinnati. The size of the building is 190 x 375 feet, to be four stories and basement when completed. Owing to the fact that they have been badly delayed in securing structural material, the delay being largely occasioned by the steel strike, they will not be able to complete the structure before next spring, and will hardly be in their new quarters before June 1, 1902.

THE WILLIAM POWELL COMPANY, Cincinnati, Ohio, makers of Brass and Iron Fittings and Steam Supplies, are again enlarging their plant, this being the second addition they have made to it during the present year. The new building is 50 x 35 feet, and three stories high, and adjoins the plant in the rear. The latest departure in manufacturing which this company have entered into is that of injectors. They are just getting out their patterns, and expect to be active competitors in that line from now on.

GEORGE L. KING, who was formerly a member of the King Mfg. Company, of Pittsburgh, Pa., is again about to start in the Plumbing Supply business. He desires to communicate with manufacturers and jobbers regarding the goods they are likely to need. Mr. King recently sold out his interest in the King Mfg. Company. His present address is 128 Fourth avenue, Pittsburgh, Pa.

New Firms and Changes.

D. O. MILLER, Rutland, Vt., has sold a half interest in his Stove and Plumbing business to his brother, William Miller. The new firm will begin business on January 1.

MORTIMER H. FIELD has purchased the Plumbing, Heating, Tinsmithing and Stove business conducted by his father, Benjamin P. Field, at Main and Willow streets, Babylon, N. Y., since May 1, 1853, and will continue the business at the old stand.

THE HEATING APPLIANCE COMPANY OF AMERICA have been incorporated under the laws of Maine, with a capital stock of \$150,000, for the purpose of acquiring and using letters patent relating to Automatic Heat Regulating Appliances. The president of the company is N. T. Merritt, Jr., of Boston, and the treasurer is Fred. H. Talcott of Boston.

THE LITTLE GIANT STOKER COMPANY of Chicago have been incorporated, with a capital stock of \$5000, by E. T. Wray, H. L. Kraft and A. J. Adams, to manufacture Power Generating and Heating Apparatus.

T. F. CROWN has bought a half interest in the plumbing business of T. Fleming at Brattleboro, Vt.

JOHN F. LARCOME has left Beachmont, Mass., to open a plumbing shop in Norfolk, Va.

What Should a Cornice Maker Know?

The question as to what a cornice maker should know, which was brought to the attention of the readers of *The Metal Worker* in last week's issue, is answered differently by several master cornice makers. Some think that he should be familiar with every detail of cornice making, from cutting the patterns to finishing the work on the building. Others claim that he should be an expert in but one or two branches of the trade, and that the man who is thorough in all the branches should be designated as a foreman.

Some very interesting experiences are given as to how educations in the trade were obtained and helpful suggestions are made that should be of value to young men with ambition and grit who desire to advance to the front ranks. The following is an extract from a letter received from a New Jersey employer:

From my experience of 30 years in different countries I expect a cornice maker to be a man who, under the guidance of a foreman, can solder and rivet moldings, brackets or any other ornaments that have been already cut and formed properly and swiftly. Some of these men gain the special ability of putting work on the buildings where often judgment of circumstances as well as some knowledge of geometry is required. It is certain that only a very small percentage of cornice makers are able to lay the work out and finish it themselves. Persons who can do this are generally advertised as foremen or cutters. Those in the first category know hardly anything about drawings and only the latter ones must understand them perfectly. There is, in all large shops, chance for any of these to have good employment providing they do their certain work right. I would call the first two classes cornice workers, either on the bench or on buildings, or both, and only the latter class cornice makers.

THE WRITER'S TRAINING.

I received a common public school education in Germany up to 14 years of age. During the last three years there, like all other boys, I had some instruction in drawing and in general geometry. From my fourteenth to my eighteenth year I learned the tinsmith's trade. During the winter months we apprentices could visit a Sunday school for practical geometrical drawings in their respective branches. Some bosses compelled their boys to attend that school and questioned them frequently about their progress.

At the age of 19 years I went to a large city and applied for work in a cornice shop, although never having seen a cornice made. I was set to work soldering together brackets, &c., but not being satisfied with such work I took every spare moment and examined the drawings lying around in the shop, asked questions of the cutters and studied. My knowledge of geometrical drawing and my ambition, although being only a tinsmith, helped me so that in less than four weeks I was advanced to assistant cutter, and in seven weeks became a gang boss, while some of the men under me had been there for years, and never improved. I have worked since in different places and finally in my own shop made many difficult pieces of work with comparatively little reference to books.

PUBLIC SCHOOLS SHOULD BE MORE PRACTICAL.

I attribute my success mostly to the fact that I learned geometrical drawing in my youth, that I took pleasure in it and improved myself in it by utilizing my spare time in the study of it. If our present public schools would expend more time and energy in instructing boys in geometrical drawing intermingled with free hand drawing, and if this was done by experienced male teachers I judge the boys would prefer to learn trades instead of becoming office boys, schemers or something else. Geometrical knowledge and drawing in general is good in all positions in life. If taught generally we would have less trouble in producing good mechanics.

DEFINITIONS BY A BALTIMORE EMPLOYER.

The definition of a cornice maker, as given by a Baltimore employer, is as follows:

There are several classes of cornice makers; the ordinary man, the good man and the foreman, all of whom are mechanics in their particular class. In many shops there are good steady men, who cannot lay off or get out patterns for, but can solder, rivet, put together and put up the various kinds of metal work under instructions from or guidance of the foreman.

A man who would enjoy the title of a first-class cornice maker should have a fair knowledge of drawings, making patterns for his miscellaneous work. Should he aspire to the position of foreman he should possess a fair education in drawing, mathematics and pattern cutting and be familiar with the necessary cornice making machinery and able to estimate from drawings. In short, a mechanic, whether he be a cornice maker or otherwise, should never be done learning. For the beginner we believe it absolutely necessary that he should devote much of his time during apprenticeship to attending a drawing school. He should also provide himself with a first-class pattern book.

PRESENT GENERATION NOT ANXIOUS TO LEARN.

The head of a Boston house thinks that the great trouble is with the young men of the present time, who do not seem anxious to improve themselves. He says:

The young men of to-day do not seem to catch on to the importance of what they should really learn. All they seem to care about is to get through the day and get their money Saturday night. Once in a while we run across a young man who will ask questions and will try and pry into things, to know the reason why they are done, and who asks questions in regard to cutting work and breaking work up on the machines. In our shop we take young men to learn the trade and put them on all classes of work and give them a chance to cut and form up on the machines. Since we have put in our large brakes, run by power, we have broken in two or three of the young men, taught them how to work them and then have put them to the bench again to finish their trade. We think the trouble to-day is more with the boys themselves in not trying to help themselves by asking questions. If they would go to evening schools it would be a great help to them.

EMPLOYERS MIGHT TEACH EMPLOYEES.

The president of another Boston cornice making concern thinks that employers could profitably help teach their men. He writes:

I think it very essential that a cornice maker should be a tinsmith before becoming a cornice maker. I first worked three years in a tin shop, and I have always felt that I was greatly helped by my knowledge of tinsmith machinery and the methods employed in making tinware. Every man who takes to cornice work should learn to cut patterns when he first starts in. We have experienced a great difficulty in getting men to take charge of work. Men that have worked for us 15 or 18 years have apparently never thought it worth while to learn to cut patterns or improve themselves any further than to do a good day's work with tools. It seems to be a fact that the men do not care. They have no ambition. If the employers would set aside an hour or two once a week for instruction, the men would doubtless take kindly to it, and the benefit would be mutual. Or if the different shops in the city would open a night school for all cornice makers it would be a paying institution.

A FOREMAN'S EXPERIENCE.

The foreman of a Jersey City sheet metal working house furnishes us with the following valuable contribution:

A cornice maker should know his business thoroughly. He should not be content to learn only one branch, but should persevere until he has mastered the entire trade, from drawing to finishing work upon the building. How can he do this? By perseverance and hard study.

Why are there so few thorough cornice makers? 1.

Lack of confidence. 2. Lack of interest in their business. 3. Unwillingness to devote spare time to hard study.

It is easy to understand why a boy can learn the mechanical branch and know how to put work together without learning the art of pattern cutting. He is profitable from the beginning as an apprentice or helper. As he learns the use of tools he is advanced. He learns to make cornices by helping older mechanics make them.

PATTERN CUTTING.

The pattern cutter needs no apprentice. His work must not be intrusted to unskilled hands. One mistake on his part might cause the loss of a great deal. To be a pattern cutter one must study and become proficient in the art of cutting, and know the principles upon which the work is done. This is within the reach of every bright, energetic young man working at the trade. The first thing to do is to get a good book on pattern making. There is none better than "The Metal Worker Pattern Book." Then devote a reasonable amount of time to study, and there is no reason why one should not succeed. There are very few cutters who do not take pleasure in explaining a difficult problem, or showing one who is willing and trying to learn.

Pattern cutting is a fascinating study, and if once taken up in earnest it becomes a pleasure more than a duty. It is always encouraging to know there is a chance for improvement ahead.

SHOULD KNOW ALL BRANCHES.

The following interesting communication comes from a prominent New England sheet metal worker:

A cornice maker should know everything about his business that it is possible to know. The cornice business has developed into the art of working sheet metal entirely for buildings, and therefore it is not enough for a cornice maker to know how to work sheet metal, but he should know all about buildings and all about drawings. It is true that if he is not ambitious and is willing to work all his life for \$3 a day all he need bother his head about is to acquire the knack of putting work together after it has been got out for him, and putting it up on the building after the foreman shows him how it is to go and where. But if he wants to advance himself and earn the highest possible wages, or get into business for himself, he needs to make a serious study of drawing. He should first go into an architect's office for six months without pay, and make full size details from 1/4-inch scale drawings. That will be excellent practice. If he cannot spare the time to work in an architect's office let him attend night school.

PERSPECTIVE. &c.

He wants to know how to draw sections through buildings, walls, foundations, cornices, sections through windows, plans and elevations, the same as an architect would. He should know something about perspective, so that when he sends an order into his shop for additional work he can make a sketch in perspective which will give an accurate idea of what he wants and so save many words. After he has learned the elements of architectural drawing then he wants to learn pattern cutting, developing sheet metal moldings in the flat. He should learn a little something about designing, especially if he has a taste for such work, and also something about modeling in clay. All these things are adjuncts of the architectural sheet metal business. The more he knows of such things the better equipped he is. If he has no time to go to night school, or if there is none in his town, let him take a course by mail through a correspondence school.

He should cultivate his imagination. He should be able to picture in his mind moldings standing out in the air, so that he can see them almost as plain as if drawn. Then he can study in his idle moments these images sticking out in the air, and find out the best plan of cutting a pattern from them.

EMPLOYERS SHOULD EDUCATE WORKMEN.

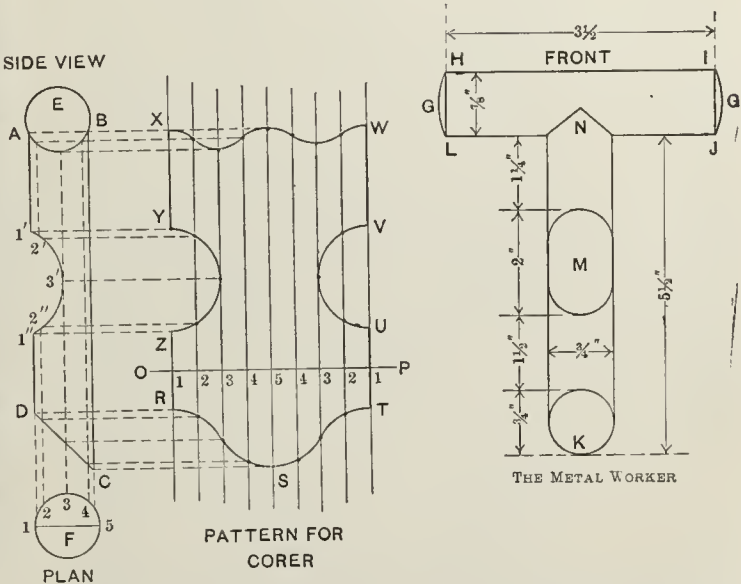
It seems to us that if the employers would take up the matter of educating their workmen, they would find it greatly to the mutual advantage of both the employer

and employees. Let the employers apply one hour of the shop's time on Saturday afternoon to giving a lecture to all of the workmen in the shop on pattern cutting, architectural drafting, the best way to put up work and the best way to put it together. A half an hour's talk might be made by a competent leceurer with black-board sketches, and another half hour spent in discussions by the workmen on what they have just heard or on matters pertaining to the business. This would be the most profitable hour that the employer would be paying for. It would set the young fellows to thinking during the evenings and the hours of their work. It would present their work to them in a new light and it would put them in the way of helping themselves.

I know of one man who has been in business for 25 years, and yet in his shop there is not a man who has grown up with him whom he could pick out and put in charge of the shop to cut patterns, or anything else in that line. It is simply on account of this policy of letting everybody shift for himself. The boss watches the men to see that they do not loaf, and the men watch the clock to see that they do not work too long. The Saturday hour lecture would change all that, and bring the employer and workmen together in a new and favorable light and show that their interests are mutual.

PATTERN FOR APPLE CORER.

A useful little article that can be made from scrap tin, with all seams and joints soldered, is an apple corer. The full size dimensions and method of obtain-



Front and Side View and Pattern of Apple Corer.

ing the pattern for the corer are shown in the accompanying illustration, in which A B C D is the side view of the corer, soldered to the handle E at the top, with an opening on the line C D, which forms the blade which cuts into the apple, while the opening 1' 3' 1" allows the core to be taken out. The section through the corer is shown by F in plan. H I J K L shows the front view, K representing the circular blade, M the opening and N the joint. The round disks G and G at the ends of the handle are slightly convex, and assume that shape when using the hollow punch in punching the disks.

To obtain the pattern for the corer proceed as follows: Divide the half plan F into an equal number of spaces, as shown by the small figures 1 to 5.

Parallel to B C and from these small figures draw lines intersecting the blade line D C, the core opening at 1', 2', 3', 2" and 1", and the handle E, as shown. Now at right angles to B C draw any line, as O P, upon which place twice the number of spaces contained in the half plan F, as shown by the small figures 1 to 5 to 1 on O P. Through these intersections and at right angles to O P draw lines indefinitely, as shown, which intersect with lines drawn from points of intersections on D C, 1' 2' 3' 2" 1", and on A B having similar numbers, as shown in the pattern. A line traced through points of

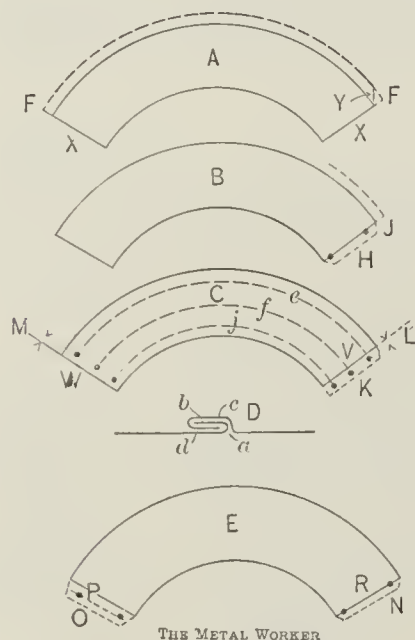
Intersection thus obtained, as shown by R S T U V W X Y Z, will be the pattern for the corer. The pattern for the handle is not shown, as that simply consists of a tube as long as from H to I in front with a diameter equal to E in side view, having the convex disks soldered on same to close the ends.

ALLOWING LAPS ON PATTERNS.

In *The Metal Worker* pattern cutting articles, all patterns, unless it is otherwise stated, are shown net—that is, no laps are allowed for seaming, riveting or wiring. These must be added, as required, by the pattern cutter when cutting the metal.

It is the usual practice for wiring to add to the height of the pattern three times the thickness of the wire in use. For a soldered or riveted seam a lap on one side of the pattern is all that is required; while for a grooved or locked seam edges or laps must be allowed on both sides of the pattern. Care should be taken when making allowance for a grooved seam, so that a single edge is allowed on one side and a double edge on the other. While this seems a simple matter some allow double edges on both sides.

To better illustrate these points, Fig. 1 shows five diagrams lettered A B C D and E. A represents a pattern to which the allowance has been given for wiring. The radial lines X and X are continued as shown, which



Allowing Edges for Wiring, Soldering, Riveting and Grooving.

will be the proper lines to notch and not notch off the corner, as shown at Y, which is sometimes done.

Diagram B shows a pattern to which a soldering edge has been added, as shown at H. In this case a lap is only required on one side of the pattern. A portion of a wiring edge has been allowed, showing how it should be notched at the corner J.

Diagram C shows a pattern to which a riveting edge has been allowed. In work of this kind the holes for riveting should be punched before the pattern is rolled up. In this case, as in the soldering edge, a lap on one side of the pattern is required, as shown at K. Through the center of this lap, at proper divisions, holes are punched as shown. Now, assuming that the distance from the line of the pattern V to the center of the holes is equal to L, then place this distance on the opposite side of the pattern, measuring from the line of the pattern W and obtain the distance M equal to L; then, using the center of the pattern, describe arcs *e*, *f* and *j*, thus obtaining the rivet holes in their proper position, so that when the article is rolled the holes will come over each other.

In diagram D is illustrated a grooved seam, showing the amount of edges which must be allowed. Thus *a* is where the pattern would meet were no edges allowed. By following the diagram, *b* shows why one edge is al-

lowed to one side of the pattern in diagram E, as at N, while *c* and *d* in diagram D shows why two edges must be allowed on the opposite side of the pattern in diagram E, as at O and P. Thus one side has a single and the other side a double edge. When bending the edges in the folder or hatchet stake one is bent on the line R and the other on the line P.

A word about wiring. Care should be taken when notching the edges at the wire allowance to notch them as shown at J in diagram B, so that when formed up the ends of the wiring edges will butt sharp and make a clean, neat job. The soldered, riveted or grooved edges should come directly under the wire.

The Youngstown Iron, Sheet & Tube Company.

The Youngstown Iron, Sheet & Tube Company, now erecting sheet and tube mills at Youngstown, Ohio, have taken steps in the last few days that will call for the expenditure of a large amount of money and will very materially increase the capacity of this concern. They closed last week the purchase of Alice Furnace, of Pickands, Mather & Co., at Sharpsville, Pa., and contracted with Pickands, Mather & Co. for a ten years' supply of ore to run the furnace and also for a new stack to be built at Youngstown in connection with an open hearth steel plant, to have a daily capacity of 800 tons. The Youngstown Iron, Sheet & Tube Company are now negotiating for coking coal properties and will erect a large plant of ovens, probably of the beehive type, to supply their coke. The capital stock of the concern will be increased from \$2,000,000 to \$4,000,000, and it is possible \$1,000,000 of this will be in bonds. This matter will be fully decided upon at a meeting of the Board of Directors of the Youngstown Iron, Sheet & Tube Company, to be held at an early date. In Cleveland last week, George D. Wick, president of the concern, sold a large block of stock to interests connected with Pickands, Mather & Co. Mr. Wick will also recommend to the board the doubling in size of the present sheet mill, or perhaps the building of a 10-mill tin plate plant, and the erection of another large skelp mill and a pipe mill to roll up to 12 inches. The transactions already made and those under way will put the Youngstown Iron, Sheet & Tube Company in splendid condition, allowing them to make sheets and tubes from the ore up and entirely independent of the outside market. In fact, this concern will have one of the most modern plants in the country. It has very much outgrown the first plans when the company were organized.

The Tuscora Steel Company.

The new sheet mill plant of the Tuscora Steel Company, at Newcomerstown, Ohio, will soon be completed. The firm expect to start their black and galvanized sheet mills about January 15, and the galvanizing and roofing plant about February 15. The main building, containing four hot mills and the same number of cold mill, is 110 x 256 feet. The galvanizing department is 50 x 120 feet, and the corrugating and roofing department 62 x 240 feet. The first two buildings are finished and most of the machinery has been installed. Edward E. Erlkson of Pittsburgh is consulting engineer, and the plant was built under his supervision. The officers of the Tuscora Steel Company are Thomas Heckett, president; R. L. Shoemaker, treasurer, and A. T. Stone, secretary.

UNITED STATES CONSUL RAVENDAL of Beirut, Syria, says that successful efforts are being made to can Syrian fruit for export. During the past season some 5000 boxes of Tin Plate were imported from Europe for the manufacture of Cans, and the industry is growing so well that it is expected a considerably larger amount will be called for next year. The manager of the largest canning factory in Beirut, a French concern, the Consul says, is desirous of importing Tin Plates from the United States, and he suggests to any American manufacturers of Tin Plates who are interested that they communicate with Ch. Gailhac & Co., Société Française de Confection, Beirut, Syria.

FLASHINGS.

THE CANTON MACHINE & MFG. COMPANY, Canton, Ohio, are sending out a series of cards, 7 x 10 inches in size, illustrating and describing the new machines which they are now placing on the market. These include a 10-foot Combination Conductor Pipe and Eave Trough Forming Machine, a 10-foot Beading Machine for Eave Trough, a 10-foot Power Conductor Pipe Corrugating and Grooving Machine, a 10-foot Power Edging Machine for Conductor Pipe and a Slip Joint Cutting and Folding Machine.

It is reported that the American Can Company have decided upon the consolidation of a number of their factories, in order to reduce operating expenses and introduce more efficient modes of production, which can be accomplished through the consolidation of operations at a limited number of points favorably located in regard to supplies of raw material and transportation facilities. It is likely that the poorly located factories and those that have the least modern equipment will be dismantled and the machinery removed to other points where the buildings are owned, instead of leased by the company. In adopting this course the company will be following the policy of the other consolidations in metal lines. The company are understood to have very large orders on hand for next year's delivery. They made recently a sharp cut in the price of Tin Cans in order to meet the competition of independent manufacturers.

H. J. PRATT & Co., Springfield, Mass., have the contract for the Cornices and Metal Ceilings for a new block that is being erected in that city for Richard McKinney.

WILLIAM A. EDWARDS, a roofer, of Coxsackie, N. Y., met his death through an accident in falling from a building on which he was putting a Slate roof, on December 9. He was a member of a number of organizations and of the Second Reformed Church, where he had served as a member of the Consistory, superintendent of the Sunday school and a member of the church choir. He was also a member of the Scott Hook & Ladder Company. He was 55 years of age, and is survived by a wife and three children.

A. E. WEIANT, New Britain, Conn., has the contract for roofing the new block being erected by A. Bentz in that city.

F. H. SNEATH, Hartford, Conn., has the contract for putting Slate roofs on the Assembly Hall, at the Old People's Home, the Elks Building and a convex conservatory for Mrs. Mary Munsell, also on two large towers for the Health Underwear Company. He is also putting Snow Guards on the roof of the West Middle School, in Hartford.

THE 1902 calendar that A. W. Burdick & Co., tanners and slaters of 22 Hernando street, Memphis, Tenn., are sending out to their friends, and a copy of which has reached *The Metal Worker*, is an unusually handsome and artistic piece of work. The calendar is 14 x 18 inches in size, suitable for hanging on the wall. The border and monthly leaves are of dark green, with silver lettering, and form the frame for a fine reproduction in colors of the painting "Contentment," by Nonnenbrugh. This reminder of the donors will doubtless be greatly appreciated by all who receive it.

THE OHIO GALVANIZING & MFG. COMPANY's plant, at Niles, Ohio, will be ready to begin operations about January 15.

WE have received from W. J. Burton & Co., 164-166 West Larned street, Detroit, Mich., a set of samples of their special brands of Roofing Plates, which they are distributing to the trade. The samples are 3½ x 5 inches in size, attached together with a silk cord, and a card with each sample gives the description and weight per box, the weight of the coating and the sizes in which the Plates are made. The samples shown consist of Eastlake, Burton's Extra, Excelsior Hand Coated and Washington Old Style Terne Plates. The company advise us that they will be pleased to furnish these samples free of charge to all who apply for them.

THE CINCINNATI PUNCH & SHEAR COMPANY, Cincinnati, Ohio, are preparing to increase the capacity of their plant 20 per cent. by the addition of new tools. The company are shipping out a large number of their Tools and Machines in response to orders. Recently they have shipped two 10-foot Pack Shears to the Tuscora Steel Company, manufacturers of Sheets, at New Comerstown, Ohio, and two more Pack Shears for the National Enameling & Stamping Company of Granite City, Ill.

THE warehouse of the American Sheet Steel Company's plant, at Canal Dover, Ohio, was destroyed by fire recently, entailing a loss of \$10,000.

THE AMERICAN ROLLING MILL COMPANY of Chicago, Ill., have been incorporated by L. C. Stralght, Henry Huffield and J. C. Plrie with a capital stock of \$1,000,000.

THE 12-mill Sheet plant of the Sharon Sheet Steel Company, Sharon, Pa., is progressing. It is expected that it will be working on May 1.

It is reported that the National Roofing Association are considering a closer connection between the members. The project to concentrate their plants in or near Wheeling, W. Va., is said to be under contemplation.

FOLLANSBEE BROTHERS of Pittsburgh, Pa., dealers in Sheet Iron, Tin Plates, Roofing Material, &c., will erect a new three-story warehouse, 120 x 160 feet, at Second, Third and Short streets, Pittsburgh.

THE new plant of the Ashland Sheet Mill Company, Ashland, Ky., is rapidly progressing toward completion and will soon be put in operation.

I. PHILLIPS of the Welsh Tin and Sheet Mill Men's Association pointed out, in a recent report to that body, that in the first ten months of this year 14 per cent. more Tin Plate was shipped from Welsh works than in the same period of 1900, but that prices in 1900 were 7 shillings per ton higher than in 1901. The increase in shipments he attributes to the strike in this country. Considering the vicissitudes the Welsh Tin Plate trade has gone through, Mr. Phillips said it was marvelous to find it in its present position, and it was a proof that there has been a steady increase in the demand from other countries, as well as America. He added that the home consumption was about 40 per cent. more than it was ten years ago, so that they had the equivalent of 50 per cent. less shipments to America, or something like 1,200,000 boxes of Plates, which represented the production of 38 mills. The increase of 14 per cent., however, must have been entirely due to the increased domestic demand, as the export figures showed a slight decline.

SHIRLEY BROTHERS have opened a Tin shop at Mitchell, Ind., with Aura Brengle in charge.

FRIEDLEY & VOSHARDT, manufacturers of Sheet Metal Ornaments, Steel Ceilings, &c., 194 to 200 Mather street, Chicago, have just completed a Steel Ceiling for the Napoleon Hill Building, at Memphis, Tenn., requiring 500 squares, and are also finishing a Ceiling for the new Hunter Building in the same city, which will take 150 squares. The Ceiling in the Hunter Building is very elaborate in its design and is of the deep paneled pattern. The firm are establishing a high reputation for their workmanship, not only in their own locality, but also in distant parts of the country.

ARTHUR HUGHES has been appointed statistician for the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio.

THE AMERICAN CAN COMPANY of New York City are enlarging their Empire works at Geneva, N. Y., by the erection of an addition, 100 x 150 feet, and a new power house, 40 x 50 feet, which will be equipped with a new Corliss engine and boiler of 100 horse-power capacity. The capacity of the plant will be increased to 75,000,000 Cans per year.

THE BELFAST CAN COMPANY, Belfast, N. Y., have been incorporated to manufacture Tin Cans and other Tin Specialties. They are now equipping a plant with new machinery. I. S. Hunt is president.

THE ALLEGHENY STEEL & IRON COMPANY, Park Building, Pittsburgh, with mills at Avenue, Pa., manufacturers of fine Sheet Steel, will add another furnace to their

open hearth steel department, and also increase their capacity for the manufacture of Sheets. The plant of this company was started up some time ago, and contains one 50-ton open hearth furnace, soaking pits, three-high Bar mills, four Sheet mills, one Tin mill, one jump mill and four sets of cold rolls. The product of the plant is 40 to 50 tons of Sheets per day.

THE YOUNGSTOWN IRON, SHEET & TUBE COMPANY, Youngstown, Ohio, are making new process Galvanized Sheets, at Niles, Ohio, in the works formerly operated by the New Process Galvanizing Company, which they purchased some time ago. Strong claims are made for the quality of Galvanized Sheets made under this process, and it is the intention of the company to furnish them from their Youngstown works in a short time.

PLANS are being prepared for the proposed new Tin Plate mill for the American Tin Plate Company, which is to be built in the Pittsburgh district, and which will adopt entirely new methods in the manufacture of Tin. While the officials will not say so, it has been intimated that the new plant will be a ten-mill one.

THE ALAN WOOD COMPANY, Conshohocken, Pa., placed an order with the Mesta Machine Company, Pittsburgh, Pa., for a pair of piston valve reversing engines, 50 x 60. These are to be direct connected and will be used for driving the new blooming mill that the Alan Wood Company will install. The contract for a pair of 40 x 60 reversing engines, geared 5 to 7, for operating their new blooming mill, has been placed with the Mesta Company by the La Belle Iron Works.

THE BOSTWICK STEEL LATH COMPANY of Niles, Ohio, held their directors' meeting last week and declared a 5 per cent. semiannual dividend. All departments were reported to be running full blast and the outlook most promising.

New Publications.

ERRORS IN SCIENCE TEACHING. By Professor C. Stuart Gager, Albany, N. Y. 73 pages; illustrated; size, 5 x 7 inches. C. W. Bardeen, publisher, Syracuse, N. Y.

This entertaining little book of Professor Gager's has been prepared, according to the introductory statement, for the purpose of pointing out some of the "false scientific statements and theories" published in modern text books, and which are generally received as absolute truth by students everywhere. The particular points dwelt upon in the work are the statements that "hot air tends to rise;" that "heat expands and cold air contracts," and that "water seeks its own level." Chapters are also devoted to cross pollination versus cross fertilization; how plants breathe; the course of ocean currents, and the cause of lunar tides. The work is written in a popular and attractive way, and will no doubt be read with interest, and possibly with surprise, by many students of natural science. It is illustrated by a number of diagrams and charts, and is written in such a clear and simple way as to be readily understood by the average school boy.

ELECTRIC GAS LIGHTING. By H. S. Norrie. 100 pages. 57 cuts. Size, 5 x 6½ inches. Published by Spon & Chamberlain, 12 Cortlandt street, New York, and E. & F. N. Spon, Limited, 125 Strand, London.

This book is issued with a view of conveying instruction as to the installation of electric gas lighting apparatus, including the jump spark and multiple system, for use in houses, churches, theaters, halls, schools, stores or any large buildings. It also contains directions for the care and selection of suitable batteries and in regard to wiring and repairs. The aim of the author is to enable any one possessing ordinary mechanical ability to construct much of the apparatus used for the purpose of lighting gas by electricity, or at least to successfully erect it and keep it in operation. The headings of the chapters convey a sufficient idea of the field aimed to be covered by the book. These are: "Multiple Gas Lighting Connections and Wiring;" "Primary Coils and Safety Devices;" "Lighting of Large Buildings," and "How to Select Batteries for Gas Lighting." The text is amply illustrated by engravings, and the book is gotten up in a very attractive style.

Business Conditions in Eastern New England.

We have received the following communication from a valued correspondent in Maine, which throws an interesting light upon existing business conditions in that part of the country:

In Eastern New England, and particularly in Maine and Eastern New Hampshire, a very hopeful feeling exists that 1902 will be the busiest and consequently most prosperous season that mechanical lines have seen for many a year. Maine responds slowly to good times, and after about two years of prosperity in the West, then always improvement slowly appears in this portion of the country. Now that good times have, apparently, reached their high in the West, we are just beginning in earnest to have our good time. It is the universal talk throughout the State of Maine that the present year has been the busiest, and, as a rule, the most prosperous year for a long time.

More buildings, especially high priced business blocks and residences, have been and are being erected than usual. This is rather a hard State in which to do much in the way of building in winter. Yet the present winter presents an exception in the unusual amount of such work that is being done. Most mechanical trades are unusually active for December; in fact, it is difficult to obtain men enough for the work required. The weather for the past month, however, has been very severe. Seldom do we have such large falls of snow and such continued cold weather; and, of course, this has somewhat retarded building operations. The general opinion is that 1902 promises even better than the present year. Architects and builders inform me that all signs point to a large amount of building for next year.

Low water in the rivers, thereby reducing the output of factories and mills, and in some cases closing, or partially closing, the same, has been the only cloud visible as likely to injure business for the next 12 months. But, thanks to the rains and thaws of the past ten days, that cloud has almost entirely disappeared.

Finally, a good year is due us. We always have, in time of prosperity, two to three years of good times, and 1901 has been one of them. We must have at least one more. Besides, in this State, we always have one good year after a panic strikes Wall street. As a panic has not yet struck Wall street, we, in this State, need not as yet furl our sails.

To Suppress the Chicago Smoke Nuisance.

Prevention of the smoke nuisance by thorough inspection of steam boilers and steam plants was aimed at in an ordinance submitted to the city Council of Chicago on the 16th inst. The measure was sent to the Council by Health Commissioner Reynolds and had been drawn up by the Municipal Art League. Dr. Reynolds wrote that the measure was in substantial accord with the recommendations of the Health Department, and he asked that it be referred to the corporation counsel for an opinion. The request was granted.

The ordinance provides for a new department for the inspection of steam boilers and steam plants, the chief inspector to be appointed by the Mayor for two years. The deputy inspector and smoke inspector of steam boilers and steam plants to be appointed by the Mayor upon the recommendation of the Civil Service Commission.

The ordinance combines present smoke inspection with the boiler inspector's office. In this way it is expected that smoke will be stopped before it reaches the air after a thorough inspection of plants.

The three officials are to form a Board of Inspectors, and this board will pass on all cases of violations. The fees will pay the salaries of the board and the assistants. The chief inspector is to be a man of practical experience, and the deputy must be a graduate of a reputable college of mechanical engineering, or have three years' practical experience, and neither must be interested financially in steam boilers.

The salaries of the members of the board are placed at \$3600 for the chief, \$3000 for the deputy and \$2400 for the smoke inspector. Elaborate provisions are made to prevent explosions, and boilers must be inspected before being placed in buildings.

THE LETTER BOX.

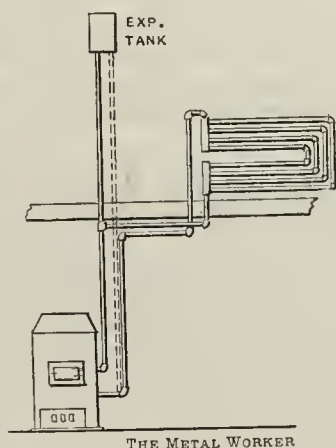
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

EXPANSION TANK BOILS.

From S. J. S., Havre de Grace, Md.—Will you kindly assist me in overcoming the trouble with a hot water heating system which I have placed in four houses? My impression is that there is something wrong with the arrangement of the piping, from the fact that the water boils in the expansion tank, when the thermometer on parts of the heating system will not show a temperature above 200 degrees. The sketch herewith will show the arrangement, which is the same in all the houses. It will be noticed that at a point within a few feet of the furnace the expansion pipe is connected with the flow pipe. Would the trouble referred to be overcome if the expansion pipe was connected to the return pipe of the furnace, as shown by the dotted lines?

Answer.—Benefit will attend a change of the piping arrangement. The flow pipe should connect at the top of the radiator coil and the return pipe should be connected at the bottom. The expansion pipe may be connected as indicated by the dotted lines, but it would



Expansion Tank Boils.

be better to connect it with the flow pipe at the point where it connects with the radiator coil. Such connection would allow any air that might accumulate in the coil to escape, and at the same time would permit any steam that might be generated in the water heater to pass off. The connection between the expansion pipe and the flow pipe at the present time does not aid in the escape of air from the heating coil.

QUESTIONS ABOUT PLUMBING GOODS.

From Apache, Mammoth Hot Springs, Wyo.—Will *The Metal Worker* please inform me for what purpose the $\frac{1}{2}$ -inch plug is inserted in the bonnet of a gate valve? For what purpose is a Kittanning mixer used? Will a Mueller pressure regulator work on the water supply pipe in a building if placed in a vertical position?

Answer.—When large gate valves are subjected to a hydraulic test air naturally accumulates in the bonnet of the valve, and the $\frac{1}{2}$ -inch plug referred to is provided for the purpose of liberating the air. In some constructions the air may be allowed to escape around the stem of the valve, consequently the $\frac{1}{2}$ -inch plug is not found in all constructions of gate valves. The Kittanning mixer is a device used in connection with natural gas burners. The construction provides that the pressure of the gas issuing from the supply main draws in with it a certain amount of air, so that instead of burning with the ordinary red illuminating flame it burns with a blue flame of high temperature. The Mueller pressure regulator, being actuated by a spring, will work equally well whether placed in a vertical or a horizontal position.

SOLDERED STANDING JOINT FOR TIN ROOFING.

From Roofer.—I saw in *The Metal Worker* of November 23, under the head of "The Advantages of Tin Roofing," a reference to a patent soldered standing joint for tin roofing. Please let me know by whom it is made and how it is applied to the roof.

From S. H. K., Lufkin, Texas.—In *The Metal Worker* of November 23 is an article under the head of "Advantages of Tin Roofing," in which you refer to a patent soldered standing joint. Is this something new? Might I take the liberty, as a reader of *The Metal Worker*, to ask if you will inform me what this is? I should also like to get the name and address of the patentee of this style of roofing. I am doing a good deal of roofing and always like to keep up to date as nearly as possible.

Answer.—The device referred to in the article on "Advantages of Tin Roofing" is Reese's soldered standing joint, the patent on which is controlled by E. L. Parker & Co., Baltimore, Md. This device was illustrated and described in *The Metal Worker* of July 13, 1901. If our correspondents will communicate with the firm mentioned they will no doubt receive full particulars in regard to this method of roofing.

LIFT PUMPS WITH LONG SUCTION PIPES.

From F. F. T., Portlandville, N. Y.—Thinking it might help "C. R.," who inquires about pump work in *The Metal Worker* of December 7, I give the following description of a pump which I placed near this place. The spring from which the water was taken was 300 feet away from the pump and 29 feet below the level of the ground where water was desired. I used one of Gould's siphon well force pumps, with a $1\frac{1}{4}$ -inch suction pipe, without any air chamber, placing the pump in a pit so that the raise for the water to the pump was only about 19 feet. I used a check valve on the lower end of the suction pipe. Of course the pump worked very hard, but as power was used to run it it did its work well, pumping water for about 100 head of cattle and horses. I think if "C. R." places his pump as shown in the illustration given in the issue of December 7 it will work all right. If his cylinder is large an air chamber might be used with advantage. The pump I used was adapted for power, a belt running from a pulley on the pump to the shafting from which the power was supplied.

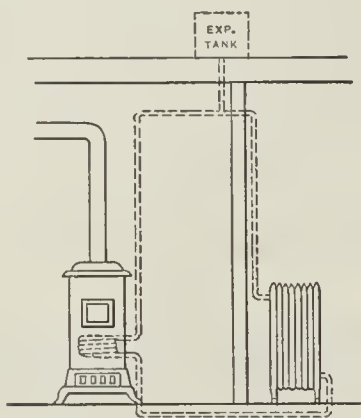
GALVANIZED IRON ROOFING ON THE SEA COAST.

From I. R., New York.—I have been on the roofs of a number of the large piers in this city, and to the correspondent "Roofer," who inquires in *The Metal Worker* of December 14 as to the durability of galvanized iron roofing in a salt atmosphere, I would say that owners of these buildings do not depend on the galvanizing alone for the protection of the iron. As soon as the gloss and grease have worn off from the galvanizing, through exposure to the weather, they are careful to coat it with a paint suitable for use on a zinc coated surface. The roofs of these piers are not only covered with galvanized iron, but in many instances the sides consist of corrugated galvanized iron siding fastened to a suitable frame work. This siding, as well as the roofs, is quite generally painted, at least on the outside, for there are some instances where the galvanizing alone has been depended upon to protect the iron on the inside. There seems to be little trouble from condensation and rust on the underside or inside of this covering of these more or less open piers. It is in protecting the outer surface that the most care is used. Galvanized roofing is far lighter and requires less expensive frame work to support it than slate, cement or any of the heavier materials. I am interested in this question, which is the reason why I make this contribution to the subject, and I hope that other roofers having experience in other cities along the coast will also give their views.

HEATING RADIATOR FROM STOVE.

From C. K., New York.—I should be glad to know if I can heat a radiator, located as shown in the sketch herewith, by means of a coil in stove having water circulating within the system. The radiator is to be on the same floor as the stove.

Answer.—In the accompanying sketch the dotted lines show the system of piping that will be needed for circulating the water. As our correspondent does not give the size of the room, the size of the radiator and the size of the pipe cannot be readily determined. If, as is probable, a radiator is used having 1 square foot of surface for each 30 cubic feet of space in the room, the heating will be satisfactory. Probably 1 inch-pipe will be large enough for the heating coil and the connections between it and the radiator. The size of the heating coil depends upon the size of the radiator used. If the coil is run around the fire chamber of the stove,



Heating Radiator from Stove.

so that the coal lies directly against it, it is probable that 1 square foot of surface in such a coil would take care of some 20 to 25 feet of surface in the radiator in the adjoining room. The size of the coil depends somewhat upon the size of the fire chamber in the stove and the manner in which the stove is run. The pipe to carry the hot water from the stove to the radiator should run nearly to the ceiling, and be carried over to a point above the radiator, where it should drop down and connect with the radiator, as shown. The return pipe may run along the floor until it comes to the stove, where it should rise and connect with the heating coil. If this is objectionable it may drop through the floor and run along the ceiling in the cellar. If this is done, however, the pipe should be covered, or a great deal of the heat of the water will be lost without benefit, and it will interfere with the heating of the room in which the radiator is located.

It will be necessary to provide an expansion tank, and if this is connected with the flow pipe near the ceiling, so that any air that would otherwise collect in the flow pipe may escape through the expansion tank, benefit will be derived. The expansion tank should be large enough to hold one-fifth as much water as is contained in the entire heating system. It may be placed near the ceiling of the room in which the stove is located, or may be set in a closet on the floor above, if that is more satisfactory and convenient.

MINERAL RODS AND MAGNETIC NEEDLES.

From M. C. R., Murillo, Ark.—I should like to know how the so-called mineral rods and magnetic needles are made, and should appreciate any information that you give me on this subject.

Answer.—The divining rod is an old device which originated with the magicians and alchemists of the Middle Ages. It has proved to be a fallacy and the fad of pretenders and sharps. The early construction consisted of a forked twig of hazel, apple or any fruit bearing tree. Later it was made with a small bottle of mercury fastened at the crotch of the twig and sometimes covered with fanciful devices. In its use the terminals of the branches were held in the hands in a horizontal line,

with the crotch or bottle end in a vertical position. Its dipping toward any object, or to the ground, is entirely due to the involuntary action of the muscles of the hands and arms; much after the same manner as with that other fad, the *planchette*. In using the rod, the hands are held in a strained and unnatural position, which renders it very difficult to hold the twig for any great length of time in the prescribed position without causing the muscles to twitch, and thus compel the branch to dip.

Bamboo rods with loadstone in one end and mercury in the other are used, and are fancied to dip from their balance to precious metals and water. A pendulum tipped with a vial filled with the kind of ore looked for and suspended by a string has been used, and fancied to vibrate in a line leading to an ore deposit. A plumb bob of hard rubber with some magnetic device in the bob and held by the hand has also been used for indicating subterranean water and minerals.

All such devices are gross frauds in their use, either by so-called experts or the misguided victims of superstition. The only reliable device for indicating the proximity of metallic ore is the dipping needle, which is only applicable in the search for ores of iron. No other metals, ores or objects have any effect upon its natural dip due to polar magnetic attraction. The dipping needle is much used in locating the trend of iron ore lodes, and has very correctly located hidden ore beds of iron only. The instrument consists of a delicately suspended magnetic needle, so balanced as to remain in a horizontal or nearly horizontal position when set in the direction of the meridian and normal to the polar direction. When moved toward, or over, an iron ore bed it immediately dips its north pole, and, if a free torsional needle, will swing in the direction of the main body of the ore. These needles with directions for their use are on sale by dealers in surveying and mining instruments.

WHAT IS THE BEST ROOF COVERING FOR ROUND HOUSES?

From J. R., Altoona, Pa.—In answer to the inquiry of "W. M." in *The Metal Worker* of December 14, I would say that the roof of a round house is no place to use metallic roofing, unless it be lead. I think there would be no difficulty with a wood framing, but the roof should be covered with slate, and nails of some composition or coated should be selected for fastening the slate on; otherwise, the action of the gases might eat the nails away until there would be nothing to hold the slates in position.

WANTS INFORMATION ABOUT A SUN MOTOR.

From G. K., Erie, Pa.—Several months ago we read in a daily paper an account of a sun motor, which had been set up and run in the State of California with success. The article in question, however, did not state by whom and where this motor was made. We should be glad if any of your readers who have this information would give it to us through the Letter Box.

HEATING MAINS IN OUTER WALLS.

From Y. F., Cranbrook, B. C.—I would like the opinion of some of the older steam and hot water fitters, through *The Metal Worker*, as to the advisability of running risers of a hot water heating system within an outside wall.

United States Consul Langer of Solingen, Germany, reports in regard to the trade school recently organized in that city, that it is obligatory for tradesmen, whether apprentices, assistants or factory laborers, to attend from four to six hours weekly until they reach the age of 17 years. The employer must pay into the city treasury the amount necessary for materials (which comes to about 72 cents annually) used by each person in his employ who is under obligation to attend the school. He is at liberty, however, to deduct such amount from the employees' wages. The Solingen trade school is supported, jointly, by the city and State.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and $\frac{1}{2}$ c. lower.

Copper is demoralized, with Lake Ingot $3\frac{3}{4}$ c. lower.

Pig Lead has declined $\frac{3}{8}$ c. per lb. and is dull.

Spelter is quiet and unchanged.

Hallett's Antimony is $\frac{1}{4}$ c. per lb. lower.

Nickel continues firm and unchanged.

Aluminum is active at former prices.

Tin Plates are quiet; American Cokes rule about 25c. per box lower.

Sheets are still in heavy demand and scarce supply; prices continue strong.

Sheet Copper is very quiet, and lower prices are looked for.

Pig Iron is very strong; Foundry Irons are about 25c. a ton higher; demand very heavy.

Hardware is rather less active, owing to advance of season, but demand is good and prices firm.

Scrap Copper and Brass are lower.

Scrap Lead is down $\frac{1}{2}$ c. a pound.

Galvanized Range Boiler prices have been withdrawn and higher prices are likely to be announced.

Plumbers' Brass Work is unchanged, but prices are likely to be readjusted owing to decline in Copper.

Solder is about $\frac{1}{2}$ c. per lb. lower.

Manufactured Brass and Copper prices have not yet been changed, but lower prices are looked for.

Wire Nails are somewhat irregular in price.

Cut Nails are in moderate demand at unchanged prices.

Wire prices are uneven.

Window Glass is dull and prices unsettled.

White Lead is in moderate demand; prices are not entirely even.

Linseed Oil is dull and 2c. to 3c. lower.

Spirits Turpentine is $\frac{1}{4}$ c. lower, but firm.

METAL MARKET.

NEW YORK, December 20, 1901.

Owing to the acute developments of the week in the cutting of prices of Copper and Lead and the weakness of Tin the entire metal market has been completely demoralized. Although purchasing has been made on a very conservative basis for some time now, consumers are more wary than ever. They are also considerably exercised over the cut in Lead, which, though a decline was expected, is much greater than looked for. Many consumers were caught with a pretty fair amount of stock going through their works. In disposing of the finished product considerable difficulty is expected.

Pig Tin.—Business has been exceedingly dull, with prices continuing on the downward grade. Arrivals are now coming in more freely and by the middle of next week will probably foot up about 2400 tons, which is considered ample to meet requirements at this time of the year. Further stocks afloat and expected to arrive in January will make up a sufficient supply for this month and next. Jobbers' prices on small lots of Pig Tin rule from $\frac{1}{2}$ c. to $\frac{3}{4}$ c. lower than a week ago—viz., at $25\frac{1}{2}$ c. to 26c. per lb.

Copper.—The market for Copper has been a scene of sensational surprises during the week. The first cut of $1\frac{3}{8}$ c., made at the end of last week, was followed on Wednesday by a further cut of similar amount, and on Thursday a third cut, amounting to 1c. per lb. was announced, making a total decline for the week of $3\frac{3}{4}$ c. for Lake Ingot for spot delivery. It is now believed in the trade that the base of 12c. per lb. for Lake Copper,

which was prophesied some time ago, is likely to be reached before the present downward movement stops. The reasons given by the principal selling interest for the radical decline in the price of Copper are the volume of competition and the falling off in both the domestic and the foreign demand. The consequence of the radical declines has been the total demoralization of the Copper market here. Naturally, under the circumstances, the volume of transactions was very light. In fact, no one for some time past has been buying more Copper than absolutely needed, in view of the general conviction which has prevailed in the trade for some time past that lower prices were certain to come, which conviction has been justified by the event. So far from any increase in the volume of business in consequence of the cut in Copper, consumers appear to be more reluctant to buy than ever, holding that now the decline has begun it is likely to proceed still further. Quite naturally, the outside producers are selling below the new quotation. Under the circumstances, prices are entirely nominal, but probably a fair quotation for small lots of Lake Ingot to-day would be $14\frac{3}{4}$ c. to 15c. The London market has declined sharply in correspondence with the market here.

Sheet Copper.—Naturally, under the unsettled conditions prevailing in the market for raw Copper, consumers are chary about buying Sheet Copper, the demand for which has shown a marked decline during the week under review. The last week or two of the year are normally dull ones in all Metal lines, but the falling off this week is above the average in extent. Users of Sheet Copper are buying nothing beyond what they absolutely need. While it is more than probable that the manufacturers will shortly announce a reduction in the price of Sheet Copper, no change has yet been made, and jobbers are still quoting small lots at the prices ruling for some time past. It is safe, however, to assume that lower prices for Sheet Copper, as for all Copper and Brass manufactures, will be announced in the near future.

Pig Lead.—An announcement by the American Smelting & Refining Company of a cut of $\frac{3}{8}$ c. in the price of Pig Lead on Tuesday startled the trade. While the decline was pretty generally expected in the trade no one looked for so wide a slash as was made, and it is said that many large consumers were caught. The cut followed the meeting of the American Smelting & Refining Company and the miners. An agreement was reached which represented about 80 per cent. of the principal warring interests. The miners agreed to close down their works whenever so ordered by the Smelting Company, and contracts were made on the basis of 3.50c. The demand for Lead is of small proportions and the market is dull and uninteresting. Jobbers have lowered their prices on small lots of American Pig to 4.45c. to $4\frac{1}{2}$ c. per lb.

Spelter.—While this metal is unchanged in price, the market has been to a considerable extent affected by the unsettled condition of other Metals and business is practically at a standstill. Stocks are very light and quotations are largely nominal. Good Western brands in small lots are still quoted by jobbers at $4\frac{5}{8}$ c. to $4\frac{3}{4}$ c. per lb. St. Louis reports indicate that the market for Spelter in that city for the past week has been less active, but prices are well held.

Antimony.—A cut of $\frac{1}{4}$ c. per lb. was made this week in the price of Hallett's Antimony, which now rules at $8\frac{1}{4}$ c. to $8\frac{3}{4}$ c. per lb. Cookson's is unchanged, being quoted in small parcels at $10\frac{1}{2}$ c. to 11c.

Nickel.—Is unchanged, continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—An active demand for Aluminum continues and prices remain at 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. per 100-lb. lots.

Tin Plates.—The situation in Tin Plates is without change of any kind, the market being dull and uninteresting. The only department that shows any particular life is the retail demand for small spot lots, which is surprisingly good for the season of the year. Prices in general are without change, but jobbers are quoting Coke Plates at slightly lower figures than those ruling a week ago. American Bessemer Coke, IC, 14 x 20, in small lots, at New York and corresponding points, now rule at about \$5.25 to \$5.50 per box. A further decline of 1½ pence in the price of Welsh Plates occurred this week.

Sheets.—There is still considerable difficulty in getting prompt deliveries of Sheets, notwithstanding that a number of the independent mills have started into operation. Business in both Black and Galvanized Sheets is still remarkably active, particularly for December and January shipments. All of the new mills have been able to sell up their product for 60 to 90 days. It is said, however, that some Sheet mills are soliciting orders for delivery in March and later. Most of the mills are taking contracts for Sheets at prices corresponding to those in force by the leading Sheet interest at the time the deliveries on these contracts are made. Retail prices continue very steady. No. 27 One Pass Cold Rolled Soft Steel Sheets are quoted by jobbers at 4c. to 4.05c. and Galvanized Sheets at 65 to 67½ per cent. off the list.

Chicago advices are as follows: The conditions previously reported are unchanged. The leading manufacturers are still much in arrears on deliveries, and the independent mills are unable to promise shipments inside of 60 days. The receipts, therefore, are falling under the requirements of the market, and this keeps prices firm. Mill shipments of No. 27 Black Sheets are quoted at 3.15c. to 3.40c., Chicago, and small lots from stock are selling at 3.50c. to 3.70c. Small lots of Galvanized are quoted at 70 to 70 and 2½.

Old Metals.—The sharp decline in Copper has caused weakness and a restriction of the demand for Scrap Copper and Brass, prices on which are lower, as also in Scrap Lead. Otherwise the market is quiet and without quotable change. Demand is of moderate proportions. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 13 c.
Light and Tinned Copper.....	per lb. 11¼c.
Heavy Brass.....	per lb. 8 c.
Light Brass.....	per lb. 6¾c.
Lead.....	per lb. 3¾c.
Tea Lead.....	per lb. 3¼c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 16½c.
No. 2 Pewter.....	per lb. 8 c.
Tin Plate Scrap, per gross ton.....	\$6.00 to \$6.50
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	8.00 to 8.25
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—A good many consumers have now purchased well into next year, some of them up to August. The reports from the Lehigh Valley indicate that the floods have very seriously delayed work, and it looks as though there will be a good deal of trouble in the near future with the supply of blast furnace Anthracite. We quote: No. 1, \$16.35 to \$17.50; No. 2 X, \$15.75 to \$16; No. 2 Plain, \$15.25 to \$16; Tennessee and Alabama brands, No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—The deliveries for which furnace companies are willing to take orders are getting further off. It is now quite difficult to find either Northern or Southern furnaces prepared to assure shipments beginning earlier than next April, for the standard grades of Iron are all well sold up. The furnace companies are still hampered greatly by the scarcity of Coke and the lack of cars, and it is believed that it will take until April to enable them to catch up, even if no additional business is booked. The week has been characterized by some heavy transactions, running in some cases up to several thousand tons. Southern Iron was mainly bought, although the share falling to the local furnaces was by no means small. A sharp demand is noted for spot

Iron. A great many foundries are buying from hand to mouth and need prompt deliveries. A disposition is noted to higher prices on Southern Iron, as some companies have made advances of from 25c. to 50c. This movement, however, is not general. We quote as follows:

Lake Superior Charcoal.....	\$18.50 to \$19.25
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	17.60 to 17.85
Southern Silvery, according to Silicon.....	16.15 to 16.40
Southern Coke, No. 1.....	15.65 to 16.15
Southern Coke, No. 2.....	15.15 to 15.65
Southern Coke, No. 3.....	14.65 to 15.15
Southern Coke, No. 1 Soft.....	15.65 to 16.15
Southern Coke, No. 2 Soft.....	15.15 to 15.65

PHILADELPHIA.—About the only thing to be said in connection with Pig Iron is that there is practically no Iron for sale for early shipment. Everything is closely sold up, and, more than that, there is a great deal of Iron due for delivery this month that cannot be got out, owing to restricted transportation facilities. Very little new business is now being done. Sellers are more interested in cleaning up old contracts than in making new ones. The general impression is that prices during the first half of the coming year will not be materially different to what they are to-day—that is, somewhere around \$16 for No. 2 X Foundry. Prices at the present time are more or less nominal, but the extreme figures both ways would be about as follows for Philadelphia and nearby points: No. 1 X Foundry, \$16.25 to \$16.50; No. 2 X Foundry, \$15.75 to \$16.25; No. 2 Plain, \$15.35 to \$15.65.

PITTSBURGH.—The Bessemer Iron market is extremely active and very strong. The car situation seems to be worse than at any time since the car shortage started and quite a few furnaces in this district are banked, being unable to get Coke. This is adding to the scarcity of Pig Iron and it looks as though prices might be higher. Foundry Iron is active and some consumers have practically covered their entire requirements for the first half of next year. We quote Bessemer Iron at \$16.50 to \$16.75; No. 1 Foundry, \$16.50 to \$16.75, and No. 2 Foundry, \$16 to \$16.25, all f.o.b. Pittsburgh.

CINCINNATI.—The strength of the Pig Iron market was never better evidenced than by the remarkable activity which developed during the past week. Not only was there a pretty general clearing out of all standard Irons for the next quarter's delivery, but odd lots, off grade assortments, and in fact everything weighing 16 ounces to the pound and called Pig Iron has been sold. At this writing there is a good tonnage in the way of inquiries which have gone the rounds and could not be filled. The selling prices have not been changed from the figures given a week ago, but it is a foregone conclusion that a rise of 50 cents will be called for within the next few days. The complaint regarding car shortage is as loud as it has been, and there is no prospect of any immediate betterment. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.25
Southern Coke, No. 3.....	to 13.75
Southern Coke, No. 4.....	to 13.25
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.25
Southern Coke, Gray Forge.....	to 13.25
Southern Coke, Mottled.....	to 13.25
Ohio Silvery, No. 1.....	\$15.60 to 16.10
Ohio Silvery, No. 2.....	15.10 to 15.60
Lake Superior Coke, No. 1.....	to 16.60
Lake Superior Coke, No. 2.....	to 16.10
Lake Superior Coke, No. 3.....	to 15.60

ST. LOUIS.—A considerable increase in activity in the Pig Iron market was noted in the past week. The volume of inquiries and sales is pronounced to be very satisfactory. Some substantial orders have been booked, including several sales of 1000 tons, to which can be added numerous smaller requirements. Most of the latter are for immediate delivery, while the larger ones are to come during the first three months of the new year. Rumors of advances to come in freight rates are still heard, but nothing definite can be announced. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.50 to \$15.75
Southern, No. 2 Foundry.....	14.75 to 15.00
Southern, No. 3 Foundry.....	14.25 to 14.50
Southern, No. 4 Foundry.....	13.75 to 14.00
No. 1 Soft.....	15.25 to 15.50
No. 2 Soft.....	14.75 to 15.25

CHICAGO REPORT.

Scrap Iron and Steel.—The demand is a little better, as dealers are buying more freely to fill old contracts or with the belief that prices may shortly be higher. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	8.00 to 8.50
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	... to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	... to 7.00
Old Boilers—whole (Iron).....	6.50 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings.....	10.00 to 11.00
Old Gas Pipe and Boiler Tubes.....	10.50 to 11.00
Cast Borings.....	4.50 to 5.00
Turnings	9.50 to 10.00
Horseshoes	12.00 to

Old Metals.—The drop in Ingot Copper has caused prices of Old Metals to be reduced. Consumers are buying sparingly. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	13 c.
Copper Bottoms.....	12 c.
Copper Clips.....	13 c.
Red Brass.....	13 c.
Yellow Brass.....	9 c.
Red Brass Borings.....	10 c.
Yellow Brass Borings.....	8 c.
Light Brass.....	7½c.
Pipe Lead.....	3.90c.
Tea Lead	3 c.
Zinc	3 c.
Tin Foil	22 c.
Pewter, No. 1.....	16 c.
Pewter, No. 2	15 c.

Old Rubber.—Trade shows no improvement. We quote as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	46.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5½c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	6¾c.
Black Rubber.....	.....	4¼c.
White Rubber.....	.....	8½c.

Rags.—Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lbs. in any quantity.

Anthracite Coal.—The demand is very good, with Chestnut in scanty supply, caused by the shortage of cars. Prices are unchanged, as follows:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

Business continues to give more definite indications of the near approach of the holidays and of the end of the year. Many travelers are already at home, and on this account, as well as because it is a time when, in anticipation of the annual inventory, purchases are restricted as much as possible, less effort is being made by manufacturers to secure orders. The volume of business thus shows a falling off. Notwithstanding these influences, which tend to restrain the movement of trade, there is a good deal doing. The most obvious and urgent business is in sorting up orders to meet immediate requirements. Of such demands there are many, as retailers' stocks generally have been quickly depleted as a result of the good business conditions which have so generally prevailed. It is found that even with a liberal buying vacant places on the shelves and in the warehouses are apt to develop. The prosperity which exists has prepared the way for an exceptionally good holiday trade, and large stocks of suitable goods have been laid in. The cold weather, which has visited many parts of the country, stimulates the calls for winter goods. Some of these are in somewhat inadequate supply. These influences are causing merchants to make urgent orders upon jobbers and manufacturers, and in spite of the season trade is thus unusually active. In the promising condition of trade and the hopeful feeling that prevails liberal purchases are also being made by jobbers and the larger re-

tailers for next year's requirements. The manufacturers are generally taking a much stronger and more independent position with their customers than has been usual until the last year or two. Guarantees are given less recklessly and prices are adhered to more firmly. There is, too, a determination to refuse to accept blanket orders or to make contracts all the advantages of which are on the side of the buyer. The difficulty of obtaining raw material is still felt in many lines, and this, with the strength of the Iron market, gives a firm tone to prices generally. The few lines which are under suspicion have apparently little influence on the market as a whole. The break in Copper has not yet had much influence on the market in manufactured goods, owing to the fact that it was in a good measure anticipated. Collections are in general satisfactory, and the whole trade is evidently in excellent condition.

NOTES ON PRICES

Galvanized Range Boilers.—It was intimated this week that after January 1 an advance would be made in the price of Galvanized Kitchen Range Boilers. The Range Boiler Association, at the present time, is in a very satisfactory condition. Only one concern (which makes a patented Boiler) is outside of the association. According to reports which have been made to the association regarding the output and sale of the different manufacturers, there is a feeling that the time is ripe for better prices. We understand that the manufacturers of Steel Plates have insisted that all specifications now in must be completed and shipped by January 1, and all orders which they hold, on which they do not receive specifications, will be cancelled on that date. They are also said to have informed their patrons that prices for Steel Plates are likely to be higher after January 1. If a change in the price of Steel Plates takes place, as anticipated, there will be a sympathetic advance in the price of Boilers.

Plumbers' Brass Work.—The market for Plumbers' Brass Work remains unchanged. Stocks in the hands of the jobbers are as low as they possibly can get them. Owing to the present unsettled condition of the Copper market, persons having large orders to place are chary of placing them. The recent reduction in the price of Copper will necessitate the recasting of costs in all of the shops of the Brass manufacturers. There will be a meeting of the Brass Association in the early part of January, at which we understand several items are likely to undergo a radical change in price. The present selling price to the jobber on several lines of Brass Work is regarded as entirely too high, and the high price made by the manufacturers seems to be having an entirely different effect from what was anticipated by them.

Solder.—The further decline in the price of Pig Tin has been accompanied by lower prices for Solder. Half and Half, guaranteed in small lots, is now quoted by jobbers at 17 to 17½ cents, and No. 1 at 14½ to 15¾ cents per lb.

Copper and Brass Goods.—The decline in Ingot Copper, as referred to elsewhere, has naturally had more or less influence on goods into which this metal enters as a material, but has had as yet comparatively little effect on current prices. The trade have been watching the course of things and keeping in close touch with the Copper market, so that they have been prepared for the present condition of things. What has happened has thus, in large measure, been provided for, and in Copper products generally there has been little change in the market. The general consensus of opinion is that for the present, and probably for the rest of the year, there will be no important changes in prices. A meeting of the manufacturers comprising the American Brass Association was held Tuesday, December 17, at which it was determined to make no reduction in goods manufactured by them. As the interests dominating this association practically control those of the American Sheet Copper Association, it is confidently predicted by responsible sources that no change in price in Sheet Copper will be made in the near future. The same process of reasoning applies to the Seamless Brass and Copper Tube As-

sociation, who met December 17 and made no changes in price. While radical changes in Raw Copper may alter the present status, it is believed that no radical reductions will be made in manufactured Copper and Brass this year. What may occur in the middle or latter part of January is another matter. One argument of manufacturers of Copper and Brass is that with stocks of material on hand at the old price a sufficient period should elapse to work it off at current rates, especially as the domestic demand warrants it. The present price of Bare Electrolytic Copper Wire at mill is 16¼ cents per pound, base; Insulated Weather Proof Wire, 15¼ to 16 cents at mill. Sheet Brass, Brass Rods, Brazed Tubing and Brass Wire are still quoted at the old prices, a good reason for which is the relatively low prices at which Brass Goods have been sold for some time.

Wire Nails.—There is no noticeable change in the condition of the Wire Nail market. Prices have reached a level below which there appears to be little desire on the part of makers to go. The strength of Billets, which are high in price and hard to obtain, naturally has somewhat of a restraining influence upon the Nail market. Irregularity in quotations continues, and prices made depend largely upon the location from which Nails are ordered. The demand for Wire Nails in the New York market has fallen off somewhat during the week. Shipments from some mills have been delayed as the result of the recent severe rains. Most of the jobbers at this point have comparatively light stocks, and will be inconvenienced if the delay in receiving Nails is prolonged. Small lots from store rule at \$2.35 to \$2.40 per keg.

Cut Nails.—Cut Nails continue to be ordered in about the usual proportions. The representatives of mills are adhering to the price of \$2.25 per keg for Nails from store. Jobbers are asking the same prices generally, although in some instances they are selling at 2 cents below these figures.

Wire.—The Wire mills have pretty well caught up with their orders and are now making reasonably prompt deliveries. The demand from manufacturers of Wire products is large, but there is a good deal of unevenness in prices. Jobbers quote Plain Wire in small lots, New York, at about 2.55 cents and Galvanized at 2.95 cents.

Window Glass.—As far as can be learned, there is little indication of headway being made toward bringing the outside Window Glass manufacturers into a price agreement with the combine. The market is unsettled, especially in the West, as the result of low prices made by factories outside the combine. The Jobbers' Association quotation on less than carload lots from store, on both double and single strength, over the entire country is 90 per cent. discount.

White Lead.—It is reported that a meeting will soon be held by the Crushers' Committee to try and harmonize the different views now existing, and, if possible, to put the prices of Lead products upon a more even basis than has recently characterized the market. The demand for White Lead in oil is only moderate, and the quotations are unchanged, small lots from store ruling at 7 to 7¼ cents per pound. These quotations are not infrequently shaded ¼ cent or so, however.

Linseed Oil.—Some of the city crushers have reduced the price of Raw Linseed Oil in large lots 3 cents per gallon, and others are still holding to former prices. The decline is the result of a dull market, and has taken place in face of an advancing Seed market. City Raw Oil, in small lots, is quoted at about 54 to 55 cents per gallon. The demand is confined almost wholly to small lots.

Spirits Turpentine.—There is a fair demand for Turpentine at this point at ¼ cent less than the figures quoted last week. The Southern market is reported strong as the result of good buying for export. The retail price of Turpentine is now 38¾ to 39¼ cents per gallon.

A CONSOLIDATION has been effected between the H. W. Johns Mfg. Company of New York and the Manville Covering Company of Milwaukee, Wis., which concerns are among the largest manufacturers of Asbestos Goods

in the world. The new concern will be known as the H. W. Johns-Manville Company of New York City. They have been incorporated with a capital stock of \$3,000,000, of which \$500,000 is in 7 per cent. accumulative preferred shares, and \$2,500,000 in common stock. The incorporators are: T. E. Wing, H. F. Ballantyne, G. W. Davenport, Robert Dickson, H. M. Wolfe, E. T. Roos and H. S. Burroughs of New York, and W. W. Orr, J. W. Fair and M. B. Fair of Scarsdale, N. Y. The consolidated company will establish headquarters in New York City, with branch offices in Chicago, Milwaukee, St. Louis, Philadelphia, Boston and other cities.

THE GLOBE MACHINE & STAMPING COMPANY of Cleveland, Ohio, have commenced operations in new quarters at 970-972 Hamilton street, that city, where they have treble their former floor space. They have recently purchased several new tools and are contemplating buying additional machinery. They manufacture special Tools, Dies, Stamped Metal Work, Hardware Specialties and Small Machinery.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED DECEMBER 20, 1901.

Aluminum— No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. Small lots..... \$ D. 37¢ 100-lb lots..... \$ D. 35¢ Aluminum Sheet, B. & S. gauge. In lots of 50 lbs or more. Wider than..... 6-in 14-in 24-in. And including..... 14-in 24-in 30-in. Nos. 13 to 19..... \$0.42 \$0.44 \$0.47 " 20..... .44 .46 .49 " 21 to 23..... .46 .48 .51 " 24..... .46 .50 .53 " 25..... .47 .51 .54 " 26..... .47 .54 .59 " 27..... .48 .57 .62 " 28..... .48 .57 .64 " 29..... .49 .60 .69 " 30..... .50 .64 .77 Note.—Lots of less than 50 lbs 5¢ per lb extra. Antimony— Cookson..... \$ D. 10 1/2 @ 11¢ Kett's..... \$ D. 8 1/2 @ 8 1/2¢ U.S..... \$ D. 8 @ 8 1/2¢ Brass, Roll and Sheet..15@20¢ Conductors— Corrugated. Round or Square.— Galvanized, 1/2 or more, N'st'd..... 70&5¢ Not Nested..... 70&2 1/2¢ Plain Round, 1/2 or more. Nested..... 70&5¢ Galvanized, Plain Round, Not Nested. 70&2 1/2¢ Spiral Riveted. Galvanized..... 40¢ See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor. Conductor Strainers— See Strainers, Conductor. Copper— Lake Ingot..... 17 @ 17 1/4¢ Casting..... 16 1/2 @ 17¢ Sheet and Bolt..... 21¢ per lb basis Cold Rolled Sheets..... 22¢ per lb basis Cold Rolled and Polished Sheets..... 23¢ basis Planished Sheets..... 24¢ basis Bottoms, Pits and Flats..... \$ D. 25¢ basis Eave Trough, Galvanized Territory..... L. C. L. Eastern..... 75&10¢ Central..... 75&7 1/2¢ Southern..... 70&12 1/2¢ S. Western..... 70&10¢ Terms, 2% for cash. Eave Trough Miters— Lap or Slip Joint..... List, 25¢ Elbows—Plain Adjustable— Eastern List. Tin..... 30¢ Galvanized..... 30¢ Perfect Elbows..... 40¢ Stove Pipe— Four-Piece No. 1, 60, 80, 85, 90, 1.00, 1.05 per doz. No. 2, .65, .70, .75, .80, .85 " No. 3, .60, .63, .65, .70, .80 " Elbows and Shoes— Galvanized..... 60¢ Casoline— See Petroleum Products.		Iron, Sheet—Black One Pass, C. R., R. G. Soft Steel, Cleaned. Nos. 14 to 16..... \$ D. 3.65.... 8.70¢ Nos. 18 to 21..... \$ D. 3.75.... 8.90¢ Nos. 22 to 24..... \$ D. 3.85.... 9.90¢ Nos. 25 and 26..... \$ D. 3.95.... 4.00¢ No. 27..... \$ D. 4.05.... 4.10¢ No. 28..... \$ D. 4.15.... 4.20¢ Russia, Planished, 4a. Genuine Russia, accord- ing to assortment..... \$ D. 11@14¢ Do. Stained..... 6@10 1/2¢ Patent Planished, \$ D. A, 12¢; B, 11¢ net Galvanized. Nos. 10 to 16..... \$ D. 12¢ Nos. 17 to 21..... \$ D. 13¢ Nos. 22 to 24..... \$ D. 14¢ Nos. 25 to 26..... \$ D. 15¢ No. 27..... \$ D. 16¢ No. 28..... \$ D. 17¢ No. 29..... \$ D. 19¢ No. 30..... \$ D. 21¢ 36 in. 1¢ per lb higher. Lead— American Pig..... 4.45@4 1/2¢ Bar..... 5@5 1/2¢ Pipe..... 6 1/2¢ Tin Lined Pipe..... 13 1/2¢ Block Tin Pipe..... 8 1/2¢ Sheet Lead, full rolls..... 7 1/2¢ Sheet Lead, cut..... 7 1/2¢ Old Lead in exchange, 1¢ per lb. Mitres, Eave Trough— See Eave Trough Miters. Nickel— Per lb..... 60@65¢ Paints, Oils, &c.— Leads— Lead, American White, in Oil; Lots of 500 lb or over..... 6 1/2¢ Lots less than 500 lb..... 7¢ Lead, White, in oil, 25 lb tin pails, add to keg price..... 1 1/2¢ Lead, White, in oil, 12 1/2 lb tin pails, add to keg price..... 1¢ Lead, White, in oil, 1 to 5 lb as- sorted tins, add to keg price..... 1 1/2¢ Lead, White, Dry in bbls..... 5 1/2¢ Lead, Red, bbls, 1/2 bbls. and kegs: Lots 500 lb or over..... 6¢ Lots less than 500 lb..... 6 1/2¢ Oils— Linseed, City, raw..... \$ gal. 54@55¢ Linseed, City, boiled..... 54@57¢ Linseed State and West'n, raw..... 52@53¢ Spirits Turpentine— In Southern bbls..... 38 1/2@39 1/2¢ In machine bbls..... 39 1/2@39 1/2¢ Putty— In bulk..... \$1.25 In bladders..... 2.25 In cans 12 lb to 25 lb..... 2.25 In cans 1 lb to 5 lb..... 3.25 Petroleum Products— In Barrels (Barrel Included) Stove Gasoline..... \$ gal. 12 1/2@13¢ Kerosene..... \$ gal. 13@13 1/2¢ Pipe, Drain— 40¢ Pipe, Spiral— See Conductors.		Registers— List Sept. 2, 1901. Black Japanned..... 60&10@60&10&5¢ White Japanned..... 60&10@60&10&5¢ Nickel Plated..... 60&10@60&10&5¢ Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... 60&10@60&10&5¢ Electroplated in Brass, Bronze or Copper..... 60&10@60&10&5¢ White Porcelain..... 60¢ Solid Brass and Bronze Metal..... 50¢ Roofing Material— 1 Ply Tarred Paper, 1/2 ton, \$26.00@28.00 2 Ply Tarred Paper..... roll, 108 sq. ft. 45@50¢ 3 Ply Tarred Paper..... roll, 108 sq. ft. 65@75¢ Slater's Felt..... roll 500 sq. ft., 50@60¢ Roofing Pitch..... \$ bbl. \$3.35 Rosin— Common and Good—Strained. Rosin, C. & D..... \$ bbl. \$1.50 @ \$1.55 Rosin, E. & F..... \$ bbl. 1.60 @ 1.65 Rosin, G. & H..... \$ bbl. 1.70 @ 1.75 Rosin, I. & K..... \$ bbl. 1.80 @ 2.40 Rosin, M. & N..... \$ bbl. 2.90 @ 3.50 Shoes and Elbows— See Elbows and Shoes. Slate Roofing— f. o. b. cars, Quarry Station. According to size. Pennsylvania: Best Bangor, \$ sq. \$3.25@4.50 No. 1 Bangor Ribbon, \$ sq 3.00@ 3.50 Pen Argyle, \$ sq..... 3.00@ 3.75 Peach Bottom, \$ sq..... 4.85@ 5.60 No. 1 Boys, \$ sq..... 3.35@ 3.55 No. 1 Chapman Keystone, \$ sq..... 3.25@ 4.25 Vermont: Sea Green, \$ sq..... \$2.00@3.15 Purple, \$ sq..... 3.75@ 4.25 Unfading Green, \$ sq..... 3.25@ 4.50 Rei, \$ sq..... 6.50@11.00 Maine: Brownville, Unfading Black: No. 1 quality..... \$5.25@7.50 No. 2 quality..... \$4.25@6.00 Solder— 1/2 & 1/4 guaranteed..... 17 @ 17 1/2¢ No. 1..... 14 1/2 @ 16¢ Prices of Solder indicated by private brands vary according to composition. Soldering Fluids— Per Pound. Smaller Barrels Q'tities Concentrated Flux..... 4c 5c Eureka Flux: Triple Strength..... 3c 3 1/2¢ Extra Concentrated..... 4 1/2¢ 5c Crystal..... 7c Gedney's Fluid..... 2c 2c Lennox Fluid..... 2c 2c Perfection Flux..... 3c 3 1/2¢ Yager's Salts, 1 lb. bottles..... each, 50¢ 5 lb. bottles, per lb., 45¢ Soldering Coppers— Per lb..... 22@24¢ Spelter— Western Spelter..... 4 1/2¢@4 3/4¢ Spiral Pipe— See Conductors. Stove Pipe Elbows— See Elbows, Stove Pipe. Stove Trucks— See Trucks, Stove.		Strainers, Conductor— Galvanized..... 50¢ Tin Pigs and Bars— Banca, pigs, \$ D..... 24 1/2 @ 26¢ 8 straits, pigs, \$ D..... 25 1/2 @ 26¢ Straits, in bars, \$ D..... 26 1/2 @ 27¢ Tin Plates, American Charcoal Plates, Bright— N. B.—The price of 20 x 28 sizes is double the price of 14 x 20. Calland Grade: IC, 14 x 20..... \$7.50 IX, 14 x 20..... 9.00 IXX, 14 x 20..... 10.25 IXXX, 14 x 20..... 11.50 IXXXX, 14 x 20..... 12.75 Melyn Grade: IC, 14 x 20..... 7.00 IX, 14 x 20..... 8.50 IXX, 14 x 20..... 9.75 IXXX, 14 x 20..... 11.00 IXXXX, 14 x 20..... 12.25 Allaway Grade: IC, 14 x 20..... 6.50 IX, 14 x 20..... 7.60 IXX, 14 x 20..... 8.70 IXXX, 14 x 20..... 9.80 IXXXX, 14 x 20..... 10.90 Coke Plates, Bright— Bessemer Steel, or equal to J. B. Grade, full weight IC, 14 x 20..... \$5.25@5.50 IX, 14 x 20..... \$6.25@6.50 N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows: 100 lb..... 15¢ 95 lb..... 20¢ 90 lb..... 25¢ 85 lb..... 30¢ Terne Plates— N. B.—The following prices are for 10 20 x 28, the rate for 14 x 20 being half as much. IX is usually kept at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward. About 40 lb coating..... \$16.50@17.00 About 80 lb coating..... 15.75@16.25 About 20 lb coating..... 13.75@14.25 About 15 lb coating..... 11.75@12.25 About 8 lb coating..... 10.50 Boiler Plates, American— IXX, 14 x 28..(112 sheets)..... \$12.50 IXX, 14 x 28..(112 sheets)..... 13.50 IXX, 14 x 31..(112 sheets)..... 15.00 Troughs, Eave— See Eave Trough. Trucks, Stove— Improved Lock Frame, per doz..... \$15.00 Steel Lock Frame, per doz..... 18.00 Daisy Improved pattern, \$ doz..... 18.00 Tubes and Tubing— Braided Brass, List Feb. 26, 1896, 30@35¢ Copper and Bronze, 3c per lb. list more than Brass. Seamless Brass Tubes, net list Feb. 6, 1899. Tin..... 50¢ Galvanized..... 50¢ Fittings for do..... 40¢ Zinc— 600 lb casks, D..... 6 1/2¢ Per lb..... 7 1/4¢
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PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized— Standard Boilers: 30 gal..... 70&10¢ 35 and 40 gal..... 70¢ Other sizes up to 52 gal..... 60&60&10¢ 52 gal. and above..... 60¢ Extra Heavy Boilers: 18 to 52 gal..... 60¢ 53 gal. and above..... 55¢ Brass Work, Plumbers'— List of December 7, 1896. Compression: Basin Cocks..... 60¢ Bath Cocks and Double Bath Cocks..... 65¢ Bibs..... 65¢ Bibs, Flanged..... 65¢ Fuller: Bibs..... 70¢ Basin Cocks, Nos. 1 to 4..... 70¢ Bath Cocks, No. 4..... \$2.40 each net Ground Key Work: Finished Bibs..... 55&5¢ Rough Bibs and Stops..... 70¢ Rough Stop and Stop and Waste Cocks..... 70&70&5¢ Rough Stop and Stop and Waste Cocks, Patented..... 65&65&5¢ Miscellaneous— Basin Clamps..... 60&65¢ Basin Plugs..... 60&65¢ Chain Stays..... 60&50&70¢ Iron Boiler Couplings: Lead Pipe, Iron Pipe..... \$1.05 \$1.10 Plain Face, 1/2 set \$0.95 \$1.10 Ground Face 1/2 set \$1.00 \$1.10 Sink or Bath and Wash Tray Plugs..... 60&65¢ Soldering Nipples..... 70&5¢ Soldering Unions..... 70&5¢ Union Elbows, Hot Water Heating..... 75&75&15¢		Cocks, Valves, &c.— Cocks— Brass— Air and Radiator Air..... 75&75&5¢ Gas Meter and Union Meter..... 65&70¢ Steam..... 65&70¢ Iron— All Iron..... 70&70&10¢ Iron with Brass Plugs..... 65&70¢ Valves— Brass— Check..... 65&70¢ Garden Hose..... 65&10@70¢ Gate..... 65&65&10¢ Globe and Angle, hose outlet..... 65&65&10¢ Globe, Angle and Cross..... 65&10@70&5¢ Horizontal, Vertical and Angle Check..... 65&65&10¢ Hot Water Radiator..... 75¢ Radiators..... 70&10¢ Safety..... 65¢ Safety, Low Pressure..... 65¢ Jenkins' Disc: Check..... 65¢ Gate..... 65¢ Globe, Angle and Cross..... 70¢ Radiators..... 80¢ Radiators, Corner..... 75¢ Safety..... 65¢ Iron— Iron Body..... 70&70&5¢ Foot..... 65&70¢ Jenkins Bros.: All Iron, except Gate..... 40&5¢ All Iron Gate..... 35&40¢ Iron Body, except Gate..... 60¢ Iron Body Gate..... 60&50&5¢ Swing Check..... 50¢ Earthenware— Brown Glazed..... 20¢		Porcelain, List of Aug. 5, 1901: Basins, Urinals and Hoppers..... A, 30¢ Closet Bowls, Sundrys, Wash- ings and Pedestals..... B, 40¢ C, 50¢ Fittings— Brass Fittings— Finished..... 70&75¢ Rough..... 70¢ Bushings..... 70&75¢ Nipples..... 70&70&2 1/2¢ Unions, Rough and Finished..... 70&70&5¢ Iron— Cast Iron Fittings, Black and alva- nized, Standard sizes..... 65&70¢ Cast Iron Bushings and Plugs..... 65&75¢ Cast Iron Flanges..... 65&70¢ Cast Iron Floor Flanges..... 65&75¢ Malleable Iron Fittings..... 70&70&10¢ " Bushings..... 70&70&10¢ " Unions..... 70&10@75¢ " Unions, Flange 60&10@70¢ " Pipe Hangers, Universal..... 50¢ Wrought Iron Nipples..... 70&75¢ " Couplings..... 60&65¢ " Long Sorews..... 60&65¢ Lavatories— Porcelain Enamelled Iron..... 80@30&10¢ Oakum— Plumbers' Oakum, 50 lb. bales, \$ D 2 1/2¢ Pipe— Brass, Iron Pipe Size— 1/4 1/2 3/4 1 1 1/2 2 2 1/2 3 3 1/2 4 4 1/2 5 5 1/2 6 6 1/2 7 7 1/2 8 8 1/2 9 9 1/2 10 10 1/2 11 11 1/2 12 12 1/2 13 13 1/2 14 14 1/2 15 15 1/2 16 16 1/2 17 17 1/2 18 18 1/2 19 19 1/2 20 20 1/2 21 21 1/2 22 22 1/2 23 23 1/2 24 24 1/2 25 25 1/2 26 26 1/2 27 27 1/2 28 28 1/2 29 29 1/2 30 30 1/2 31 31 1/2 32 32 1/2 33 33 1/2 34 34 1/2 35 35 1/2 36 36 1/2 37 37 1/2 38 38 1/2 39 39 1/2 40 40 1/2 41 41 1/2 42 42 1/2 43 43 1/2 44 44 1/2 45 45 1/2 46 46 1/2 47 47 1/2 48 48 1/2 49 49 1/2 50 50 1/2 51 51 1/2 52 52 1/2 53 53 1/2 54 54 1/2 55 55 1/2 56 56 1/2 57 57 1/2 58 58 1/2 59 59 1/2 60 60 1/2 61 61 1/2 62 62 1/2 63 63 1/2 64 64 1/2 65 65 1/2 66 66 1/2 67 67 1/2 68 68 1/2 69 69 1/2 70 70 1/2 71 71 1/2 72 72 1/2 73 73 1/2 74 74 1/2 75 75 1/2 76 76 1/2 77 77 1/2 78 78 1/2 79 79 1/2 80 80 1/2 81 81 1/2 82 82 1/2 83 83 1/2 84 84 1/2 85 85 1/2 86 86 1/2 87 87 1/2 88 88 1/2 89 89 1/2 90 90 1/2 91 91 1/2 92 92 1/2 93 93 1/2 94 94 1/2 95 95 1/2 96 96 1/2 97 97 1/2 98 98 1/2 99 99 1/2 100 100 1/2 101 101 1/2 102 102 1/2 103 103 1/2 104 104 1/2 105 105 1/2 106 106 1/2 107 107 1/2 108 108 1/2 109 109 1/2 110 110 1/2 111 111 1/2 112 112 1/2 113 113 1/2 114 114 1/2 115 115 1/2 116 116 1/2 117 117 1/2 118 118 1/2 119 119 1/2 120 120 1/2 121 121 1/2 122 122 1/2 123 123 1/2 124 124 1/2 125 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An experienced SALESMAN for New England to sell a line of high grade hot air furnaces and steam and hot water boilers; only first-class men with experience in this territory need apply. "Carbon," care *The Metal Worker*, New York. Dec. 21

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A first-class CORNICE WORKER; one who is capable of getting his own patterns and erecting the work; steady job to the right man. Jno. H. Smith & Sons, 57 Terrace, Buffalo, N. Y. Dec. 21

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of our Albany works; must have thorough and practical knowledge of stove plate manufacture in all branches; state experience, reference, age, &c. Rathbone, Sard & Co., Albany, N. Y. Dec. 21

FOREMAN for cornice, skylight, galvanized tank and windmill works; give references, age, experience and salary expected. Address Box 192, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

Good SALESMAN for Connecticut, Western Massachusetts, Vermont and New Hampshire trade in steam, hot water and furnaces; must locate in center of territory. Address, with particulars, "L. M.," care *The Metal Worker*, New York. Dec. 21

First-class TINNERS, thorough workmen, for inside and outside work. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Dec. 21

Experienced STOVE SALESMAN for Northern Illinois; send references. Apply by letter. Bergstrom Bros. & Co., Neenah, Wis. Dec. 21

FOREMAN; a thoroughly competent man who understands high and low pressure steam; one who has had experience in handling men and can bring best of references. Smith & Anthony Company, Boston, Mass. Dec. 21

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Young man with experience in bookkeeping and drafting plans for heating work; practical knowledge desirable. Box 193, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

TIN and SHEET IRON WORKER; an all round hustler; must speak German, be sober and reliable; steady job to the right man. H. F. Prenzlow, Johnson Creek, Wis. Dec. 21

Two SALESMEN, one for Michigan and one for Southern Indiana; in your application state your age, references, amount of business you wrote in 1900 and 1901, and salary asked. Enterprise Stove Company, Vincennes, Ind. Dec. 21

A good, competent WORKING FOREMAN to take charge of cornice, skylight and general jobbing shop; must be steady man and quick; one who is able to do his own drafting and estimate from plans; steady job; wages \$3.50 per day; none but competent men need apply. James Booker, 226 Seneca street, Oil City, Pa. Dec. 21

FOREMAN in general sheet metal work shop; must be able to draft, cut patterns and estimate on work, also familiar with skylight work; state age, experience and salary wanted; none but good men need apply. P. O. Box 376, New Orleans, La. Dec. 21

A good FURNACE MAN can find a permanent paying position in New York City with a future if he is the right kind. I want a man to be my general assistant. He must be able to make his own visiting list in soliciting orders for high grade furnace work and have the address to secure an audience with architects and high class custom trade. He should have a competent knowledge of the business in all its branches and detail. Must be able to go to a building and measure and design the work and then take charge of the men or superintend the job. A man with a knowledge of steam and hot water work and familiar with buying all kinds of heating materials and estimating and ability in the office is the kind of a man I want, if he has ambition. To the right man I offer an opportunity. "Warm Air Man," care *The Metal Worker*, New York. Dec. 14

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A HOUSE HEATING BOILER SALESMAN of experience, with A1 reference; must be of good character and habits; give full particulars, with salary expected. "Character," care *The Metal Worker*, New York. Dec. 7

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As TRAVELING SALESMAN or OFFICE MAN, age 35, 12 years' experience in charge branch store and in traveling in metal line; experienced correspondent and good selling ability. "F. A. L.," care *The Metal Worker*, New York. Dec. 21

A first-class PLUMBER, sober, reliable and willing, desires position in city or country; some knowledge of hot water heating and steam; Minnesota, Wisconsin, Dakota, Iowa or the West preferred; state wages. Address Box 191, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

By first-class PLUMBER and STEAM FITTER; understands general work in country shop. P. O. Box 107, Babylon, L. I., N. Y. Dec. 21

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By an expert PATTERN CUTTER and first-class SHEET METAL WORKER, experienced at heating, ventilation, blower, exhaust and cornice; have had charge of and can handle help to advantage; wages a secondary consideration if there are prospects of advancement. Address J. E. Carter, General Delivery P. O., Philadelphia, Pa. Dec. 21

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Young man with knowledge of chemistry desires position to learn the metal business; good references. Box 188, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

TRAVELING SALESMAN for 1902 in the stove, heater, gas, gasoline stove line; good reference. H. Harfield, 2025 Ridge avenue, Philadelphia, Pa. Dec. 21

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By a competent SHEET METAL WORKER and ROOFER; can estimate from plans and patterns and handle men and work to advantage; state wages; references furnished. "J. P. F.," care *The Metal Worker*, Hamilton Building, Pittsburgh, Pa. Dec. 21

By practical HEATING, VENTILATING and PLUMBING ENGINEER. Henry B. Francis, Jr., Bloomfield, N. J. Dec. 21

A practical SHEET METAL WORKER of 25 years' experience, with some knowledge of mechanical engineering and a practical knowledge of heating and ventilating problems, desires position. Address Box 190, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

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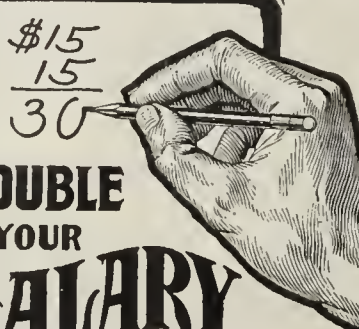
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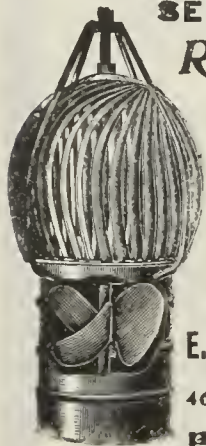
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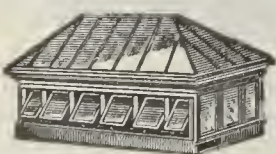
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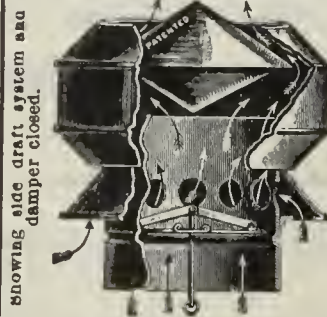


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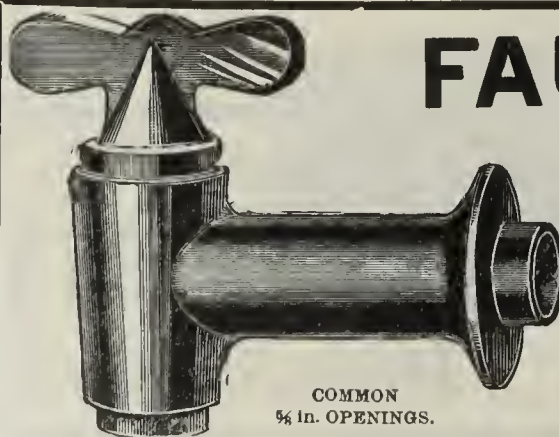
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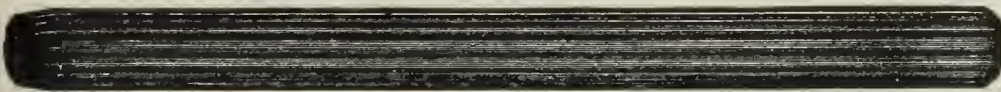
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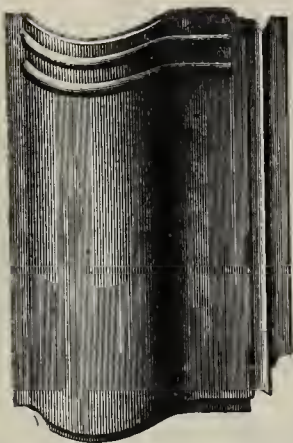


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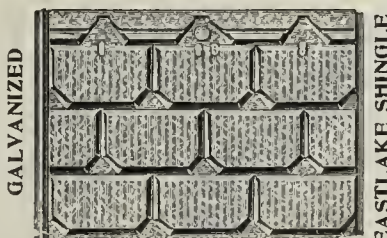
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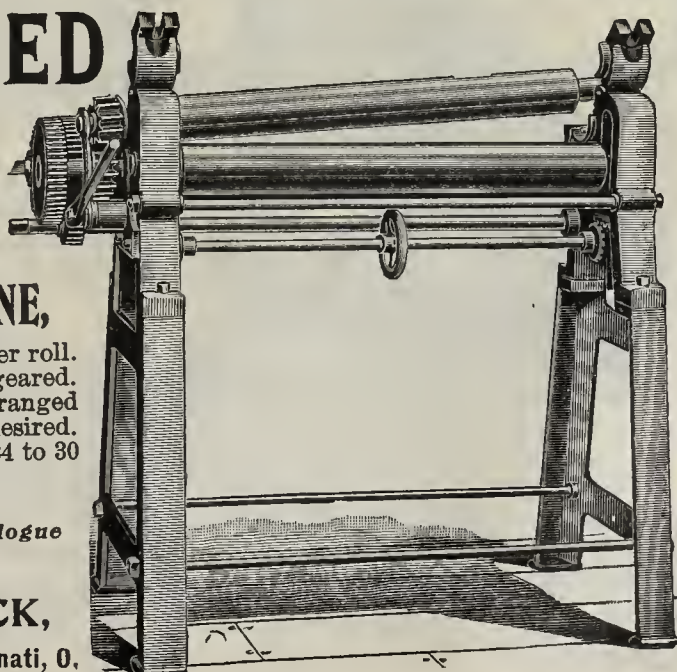
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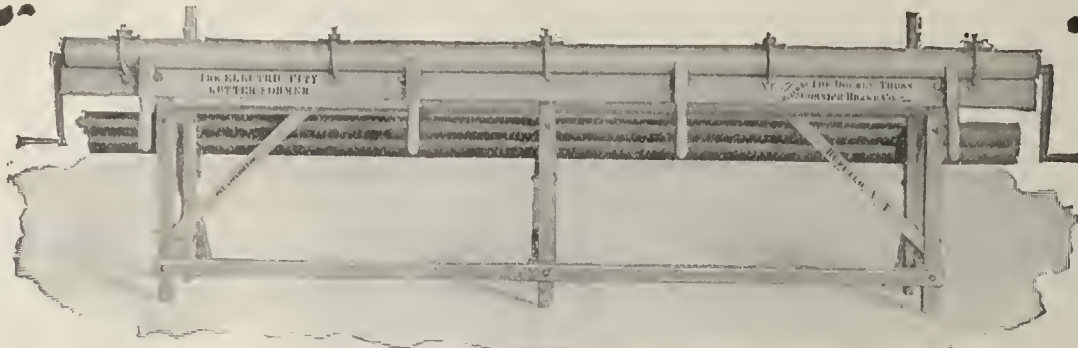
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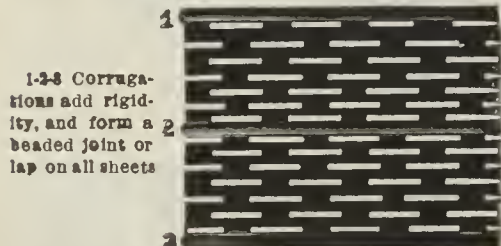
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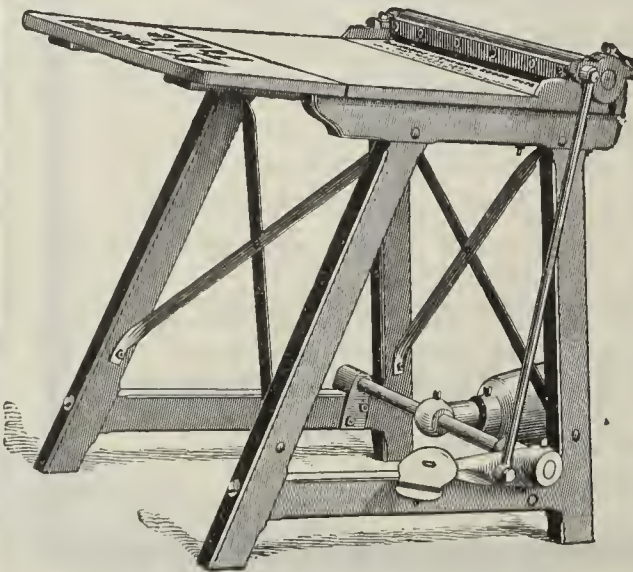
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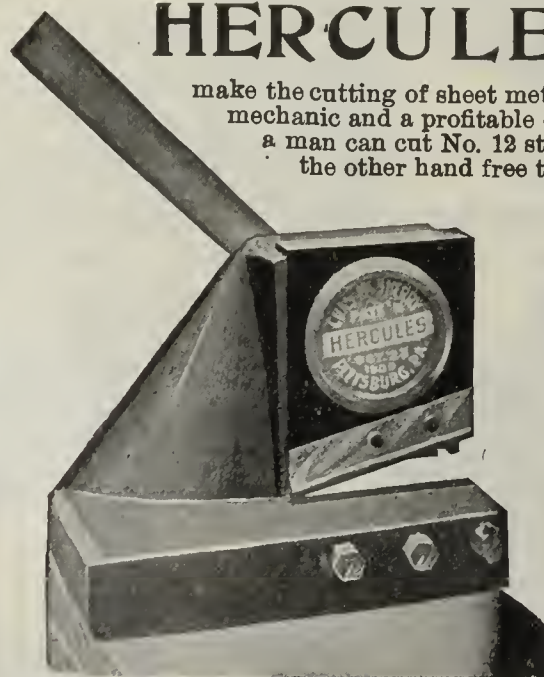
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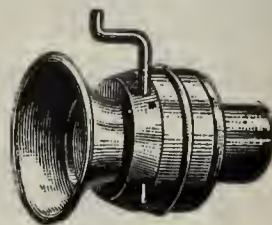
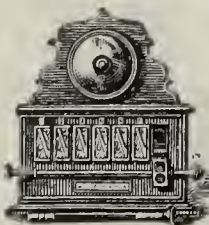
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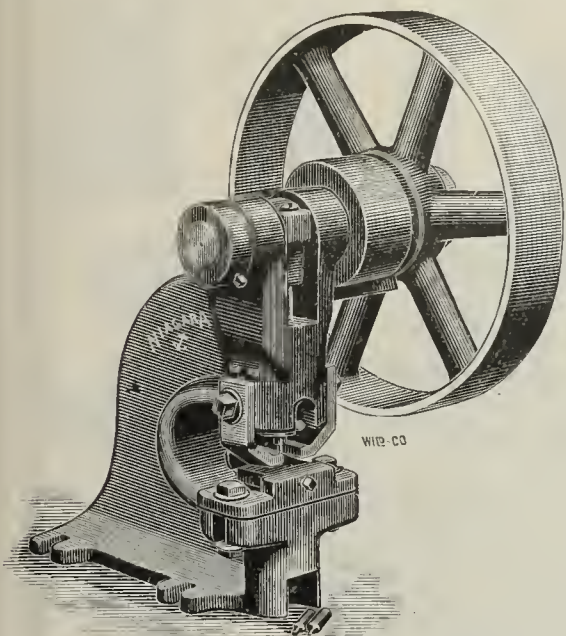
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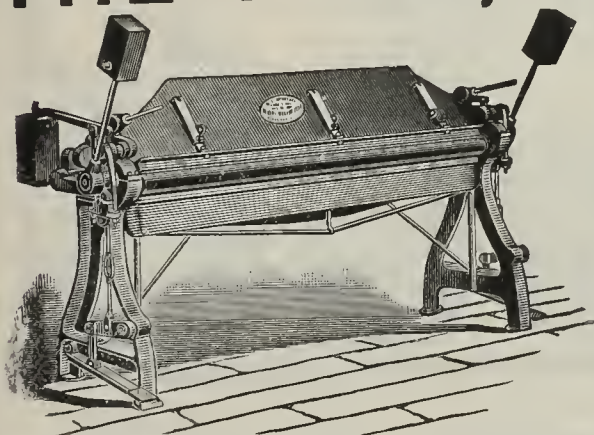
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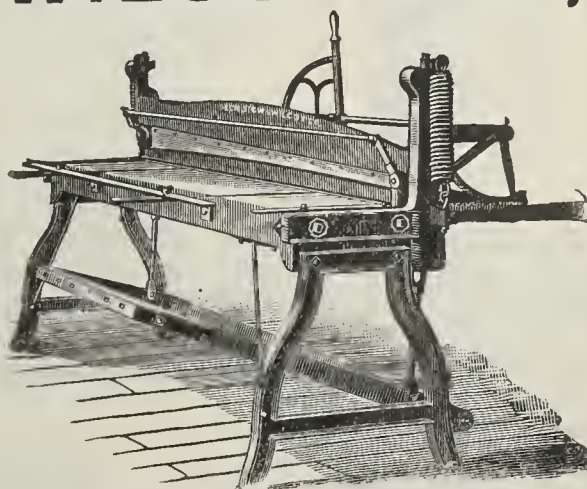
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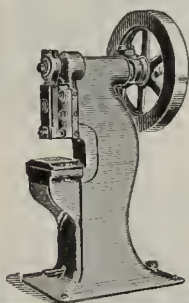
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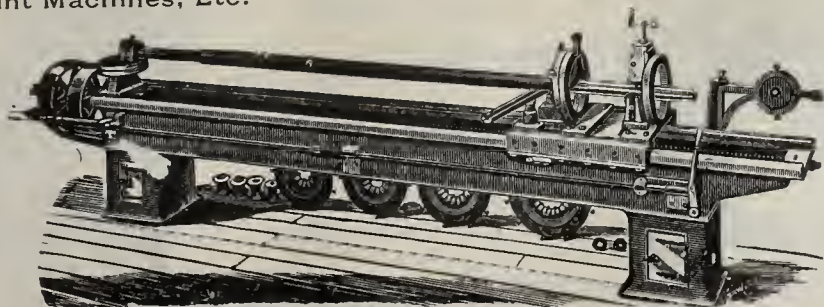
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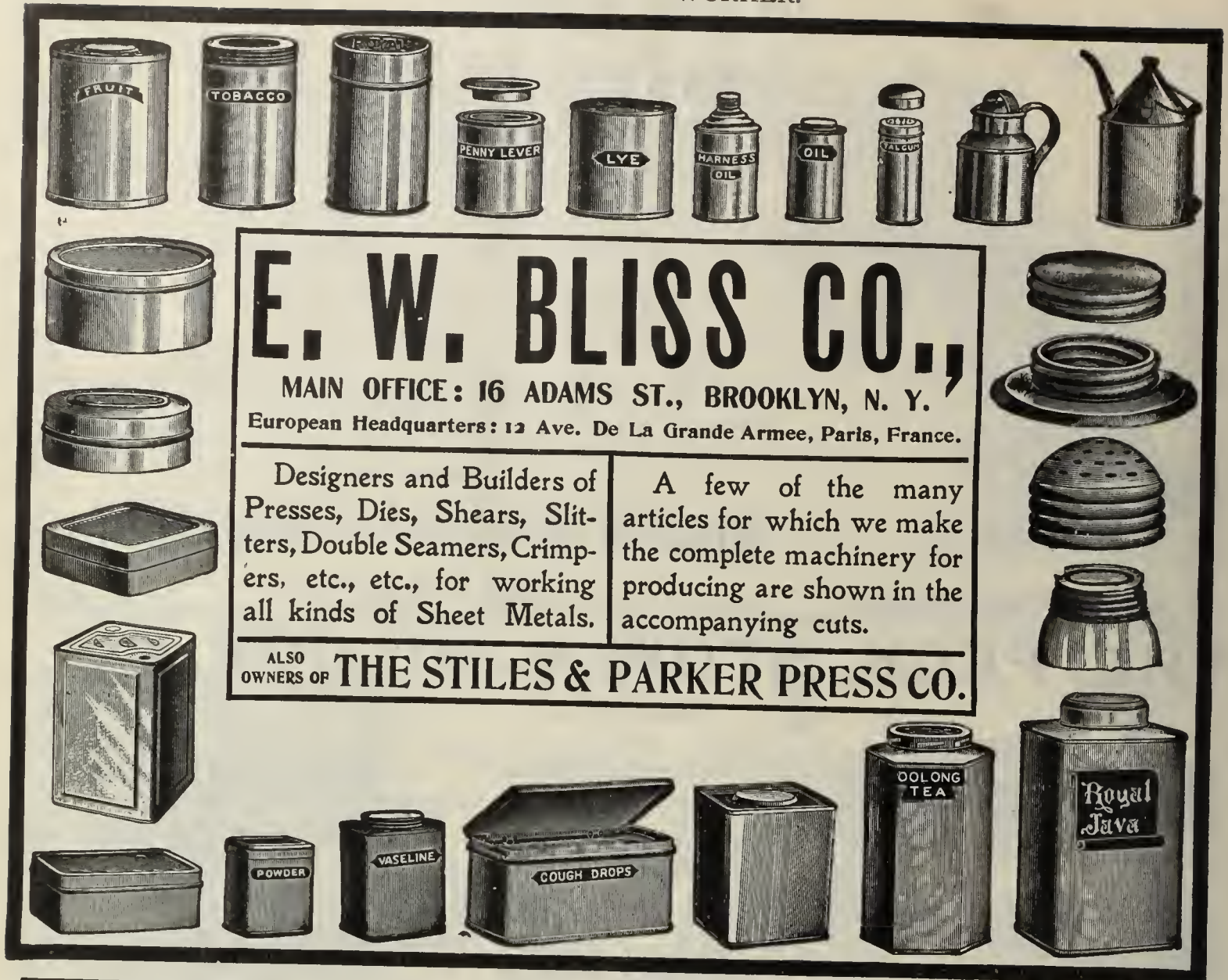
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ALSO OWNERS OF **THE STILES & PARKER PRESS CO.**

ELBOW PATTERNS

Developed on heavy detail paper,
 giving full size patterns for Two,
 Three and Four piece Elbows,
 from

2 to 20 Inch

inclusive. Sixty patterns in all,
 accurately laid out,

ONE DOLLAR.

POST OR EXPRESSAGE PAID.

David Williams Company,
 232-238 William Street,
 New York.

— HUMOR. — "And remember, Bridget,
 there are two things I must insist upon,
 truthfulness and obedience.

"Yis, mum, and when you tell me to
 tell the ladies you're out when you're in,
 which shall it be mum?" — *Yonkers
 Statesman.*

GEO. A. OHL & CO.,

157, 159, 161 ORATON ST.
 NEWARK, N. J.

(TELEPHONE 873.)

Manufacturers of all kinds of

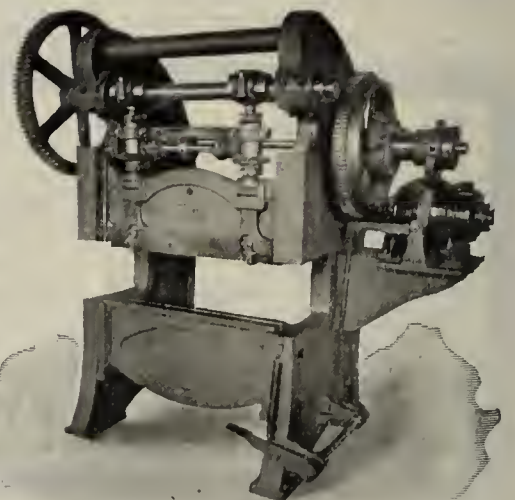
**METAL WORKERS'
MACHINES.**

BRAKES

(ALL SIZES).

**Heavy and Light Squaring
Shears.**

Punches, Presses, Sheet Steel Lath Machines,
 Drop Presses, Draw Benches, and
 SPECIAL MACHINERY of
 all descriptions.



IMPROVED GAP PRESS.

BERTSCH

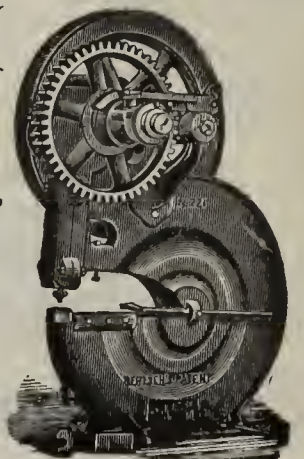
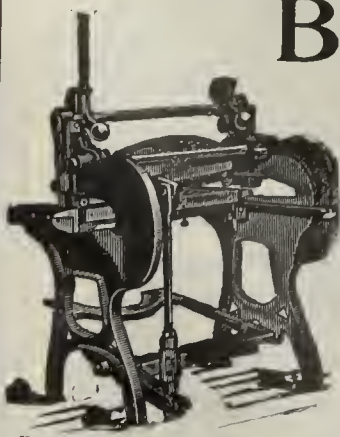
& CO.,

Cambridge City, Ind.

MFRS. OF

**SHEET METAL
WORKING MACHINERY**
 of every description.

Send for illustrated descriptive circulars
 and prices.



Agents: **MERCHANT & CO., Philadelphia, Pa.**

The J. M. Robinson Mfg. Co.



225-229 W. Second St., = = CINCINNATI, O.

KEENE FOOT POWER CORNICE BRAKE.

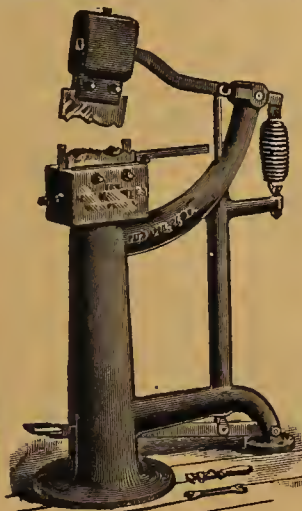
Easiest to Operate,
Strongest and Best.

SHEET METAL WORKING
MACHINERY OF ALL KINDS.



FOOT POWER CURVE MOULDING HAMMER.

The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.

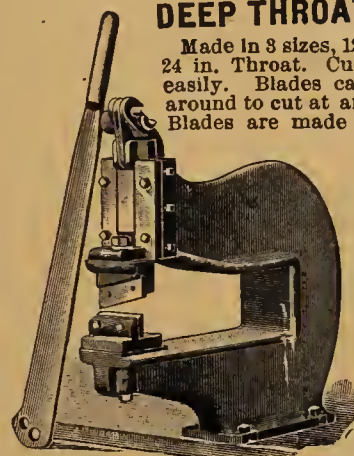


DEEP THROAT SHEARS

Made in 8 sizes, 12 in., 18 in. and 24 in. Throat. Cuts No. 14 Iron easily. Blades can be swiveled around to cut at any angle. The Blades are made with a Double Cutting edge. Can be turned over when dull. For cutting out Irregular Shapes or Holes in large sheets, is a Good Machine

Send for prices

R.M. Clough,
TOLLAND,
CONN.



PHILADELPHIA MACHINE TOOL CO.,

445 North Darlen St., Phila., Pa.

TESTING MACHINES and
SOLE AGENTS for HENNING
TESTING APPARATUS.

PRESSES and SHEARS, CORNICE PRESSES,
CURVED MOULDING MACHINES, etc.

TINNERS' TOOLS, MACHINES and SUPPLIES. Plumbers' Tools, Tinner's Hdwe., Soldering Flux, Salts, Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and **SKYLIGHT GEARING.**
H. WEISS & CO., 20 Cliff St., N. Y.

SOLDER.

Buy the Guaranteed Grades. **STRICTLY NEW METAL.**

"HUNGERFORD'S BEST," "ANVIL BRAND,"
"STAR BRAND," "REFINED WIPING."

Each Brand ALWAYS THE SAME. Packed in 250 lb. Cases. Large Stock
Always on hand. Shipments Made Same Day Order Reaches Us.

WRITE FOR PRICES.

We also carry a general line of BRASS and COPPER in Sheets, Rolls, Rods, Tubes, Wire, Rivets, etc., also Soldering Coppers. Stock Sheets sent on request.

U. T. HUNGERFORD BRASS & COPPER CO., 121 Worth St., New York.

— REFORMED AND RESHAPED.—
"George," said Mrs. Ferguson, "for heaven's sake straighten up! You're worse hump-shouldered than ever."

"Laura," retorted Mr. Ferguson, "be satisfied with having married me to reform me. When you try to reshape me you are undertaking too much."—*Chicago Tribune.*

— AFTERTHOUGHTS.—All speech is dialect to somebody.

What we need most of the time is something else to amuse us.

The fear of doing something beneath his dignity has kept many a man from increasing it.

Most people are sensitive about a good many more things than they are sensible about.—*Es.*

A Lively Business



Awaits the wide-awake stove man who handles *New Model Grands* in 1902.

BARSTOW STOVE COMPANY,

BOSTON, 55 Portland St.
PROVIDENCE, R. I.
NEW YORK, Beekman and Water Sts.

FOR STORE WINDOWS
FRINK'S WINDOW REFLECTOR
is the ideal and only perfect light for show windows. Being installed by leading stores all over the country. Circular and 200 references on request.
I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,
Bulletin Building, Philadelphia.
Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK
TINNERS'
TOOLS and MACHINES.
TINNERS'
SUPPLIES
186, 188 & 190 Water Street, and
248 & 250 Pearl Street,
NEW YORK.

UTICA PIPE FOUNDRY CO.
"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

Oven Capacity
is one of the principal requirements in a modern range. This is increased 50 per cent. in the
MODEL HUB
With Steel Oven,
by baking on oven bottom and oven rack at same time.
NO CHANGING OF FOOD NECESSARY.
SMITH & ANTHONY CO., Boston.

**FINE
SOLDERS
our
Specialty.**

THE
**TAYLOR
OLD STYLE
BRAND OF
Roofing Tin.**

N. & G. TAYLOR CO.,
MANUFACTURERS,
Established 1810. **PHILADELPHIA.**

NEW YORK OFFICE:
621 Broadway,
The Cable Building.

The Man Who Sells
Glenwoods knows nothing of the trials and tribulations of the dealer who sells goods that are shoddy. Glenwood Ranges and Heaters are made right, fitted right and shipped right; and that means its easy to reckon profits. If you want to do a clean, satisfactory, profitable business — sell
GLENWOODS.
Write the Weir Stove Co., Taunton, Mass.

HEATER PIPE TIN.
We can make prompt shipment of the following sizes:

I C.	I X.
20 x 23	20 x 23
20 x 26	20 x 26
20 x 29½	20 x 29½
20 x 32½	20 x 32½
20 x 36	20 x 36
	20 x 39

We solicit your orders.
McCLURE & CO.,
Manufacturers of Tin Plate,
PITTSBURG, PA. 211, 213 and 215 Second Ave. PHILADELPHIA, PA. 115 North 7th Street.

The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVI.
 DECEMBER 26.

NEW YORK AND CHICAGO, DECEMBER 28, 1901.

{ ONE DOLLAR A YEAR.
 { SINGLE COPIES 5 CENTS.



WALWORTH HEAVY PIPE VISE.



A first-class Tool for General Machine Work. Takes to 6-inch.

BOSTON, 128 Federal Street.
 NEW YORK, Park Row Building.



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

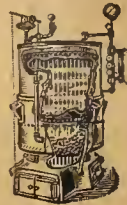
INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

CORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK.
 77 Oliver St., BOSTON.

Old Colony Bldg., CHICAGO.
 Prudential Bldg., ATLANTA, GA.



STOVE LININGS

MCLEOD & HENRY CO.,
 TROY, N. Y.

Diamond Thimbles. S. CHENEY & SON,
 Manlius, N. Y.

Excelsior Point No. 5.—PLENTY OF HOT WATER.

The reservoir boiler of the Excelsior Range being elevated horizontally over the top of the upper closet, the circulation between the waterback and the boiler is very rapid. An abundance of hot water is thereby assured. All sizes of the Excelsior are arranged also for use with an upright boiler for those who prefer that arrangement. If your range is the Excelsior you may depend upon an abundance of hot water for bath and kitchen.

ISAAC A. SHEPPARD & CO.

NEW YORK

PHILADELPHIA

BALTIMORE

You may as well have
 poor shop and tools as
 the inferior galvanized
 on.

A STOVE is a bulky piece of Goods and therefore must move quickly to return a good profit. One sample

P. P. STEWART OAK WOULD BRING YOU LOTS OF ORDERS.

Don't let it go off your floor—so order two.

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every issue.

NOTICE.

Silver, Nickel Platers and Brass Goods Mfrs.

MATERIAL FOR DRYING PURPOSES.

Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.

American Sheet Steel Company
 New York



CROSBY SPRING-SEAT GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gate & Valve Co.,

BOSTON:
 95 Oliver St.

NEW YORK:
 78 John St.

CHICAGO:
 21 23 W. Lake St.



Steam Specialties.

RELIEF and NOISELESS BACK
 EVAPOR VALVES, PRESSURE VALVES,
 STEAM TRAPS, PUMP GOVERNORS,
 STEAM AND WATER, STEAM and OIL SEP-
 ARATING VALVES, ARATORS.
 AIR TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS
KIELEY AND MUELLER,
 17 W. 13th St., - NEW YORK.



Jenkins Bros.' Valves

are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the **BEST** ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.

JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston,

FOLLANSBEE BROTHERS CO.,
 328-330-332 Second Ave.,
 Pittsburgh.
 Galvanized and Black Sheets.

The best brands of
 Roofing Tins are
 "Follansbee Pure Iron
 Old Style," and
 "Scott's Extra Coated,"
 the demand for which is
 constantly increasing.

Philadelphia Branch,
 133 Arch Street,
 S. V. Reeves, Manager.

READ OUR "AD"
Page 8.
MAGEE FURNACE CO.,
 Boston.

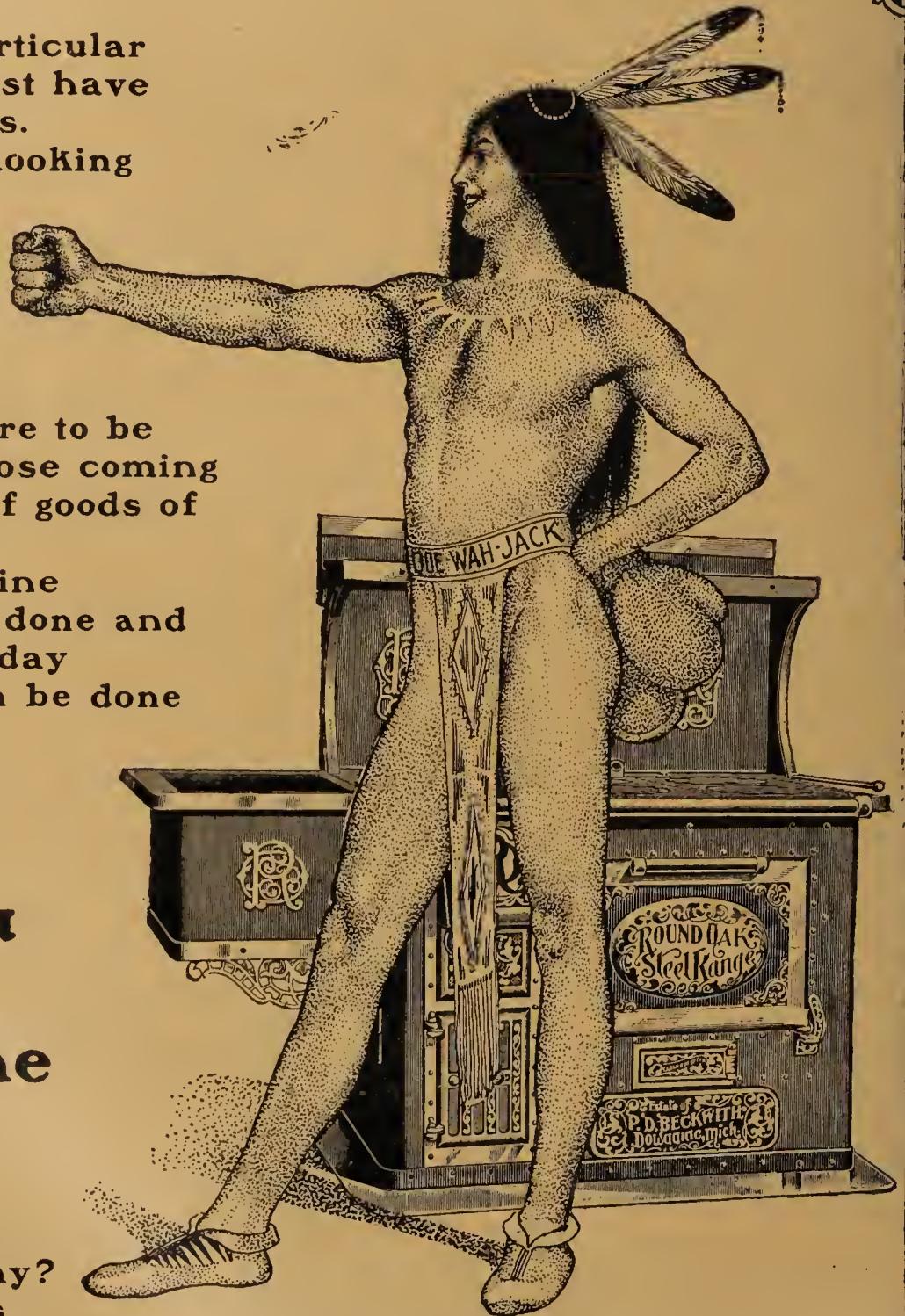
ROUND OAK

Standard of America

If you want particular results you must have particular goods. If you are not looking for particular results— but you are, every merchant is, and no results ever attained are to be compared to those coming from the sale of goods of genuine merit. What the Genuine Round Oak has done and is doing every day in the year can be done again with Round Oak Steel Ranges.

**Are you
game
to try the
best**

Steel Range on the market today? If your town is open, write us.



CAN YOU BEAT A PAIR LIKE THIS?

ESTATE OF

P. D. BECKWITH, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY

HB
CHICAGO

New Palace King

HOT BLAST SMOKE CONSUMER

Warm Air Furnace

FOR SOFT COAL.



A heavy, substantial, all cast iron and strictly high grade Heater; especially constructed for soft coal fuel.

THE HOT AIR BLAST APPLIANCE

Is so formed that the distribution of the hot air to the combustion chamber is equally divided at three points: at the back and on each side. This appliance embodies the important advantage of a hot air blast and also the very vital point of a durable construction. This question of durability of a hot blast appliance for soft coal fuel is one that has caused much annoyance and expense, and in this construction we have carefully provided for this important point. It is not a part of the combustion dome or fire-pot, insuring equal expansion and contraction. The air is discharged into the combustion chamber directly over the surface of the fire and at a very high temperature, yet the construction is such that the combustion does not come in direct contact with it; the parts are allowed to expand and contract equally.

International Heater Co.,

Largest Makers of Heaters in the World.

UTICA, N. Y.

NEW YORK.

BOSTON.

CHICAGO.

DENVER.

PARIS—GOLD MEDAL—1900.



First Prize Paris, 1900.



GARLAND STOVES AND RANGES

"The World's Best"

The Michigan Stove Works

Largest makers of Stoves

DETROIT. CHICAGO.

WORKS AT DETROIT, MICHIGAN.



To all our friends and patrons,
and those who should be our
patrons, we wish a

Happy
and
Prosperous
New Year.

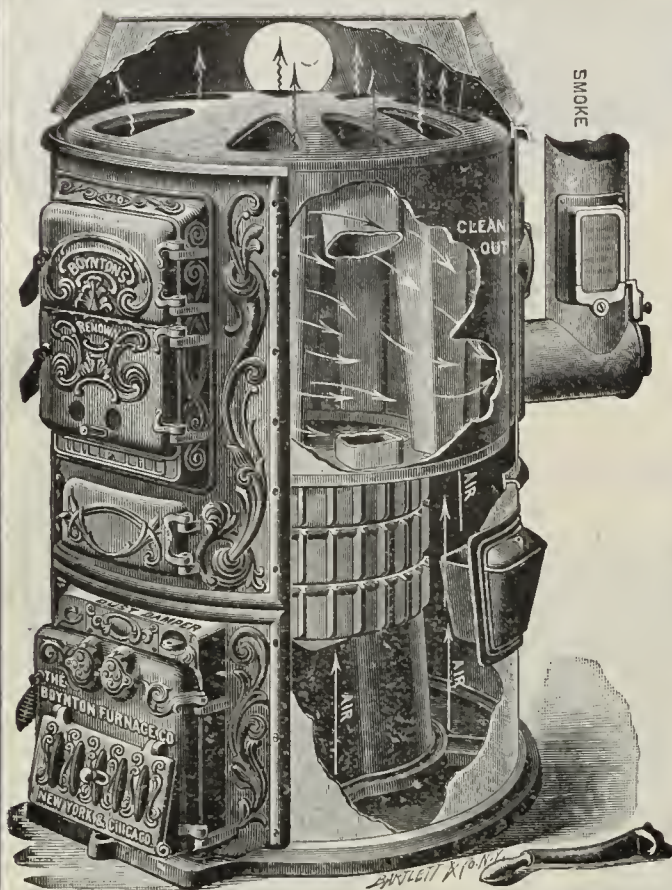
ve Company,

Ranges in the World.

BUFFALO.



BOYNTON'S "RENOWN" PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK, CHICAGO.

READ OUR OFFERINGS.

Special Advantages Over All Other Heaters.



OUR HEATERS are only 4 ft. 3 in. high, giving excellent elevation for Hot Air Pipes.

OUR HEATERS ARE ALL CAST IRON, no repairing of sheet iron drums necessary every few years.

OUR MANIFOLD TUBES are steel, $\frac{1}{8}$ inch thick, and will wear for a lifetime.

OUR HEATERS are supplied with the most modern grates, perfect dumping and shaking. Each bar can be separately replaced.

OUR HEATERS are so arranged that they can be perfectly cleaned by any one, and in a few moments.

Equally Efficient with Hard or Soft Coal.

Our Heaters save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE, REFERENCES AND FULL PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

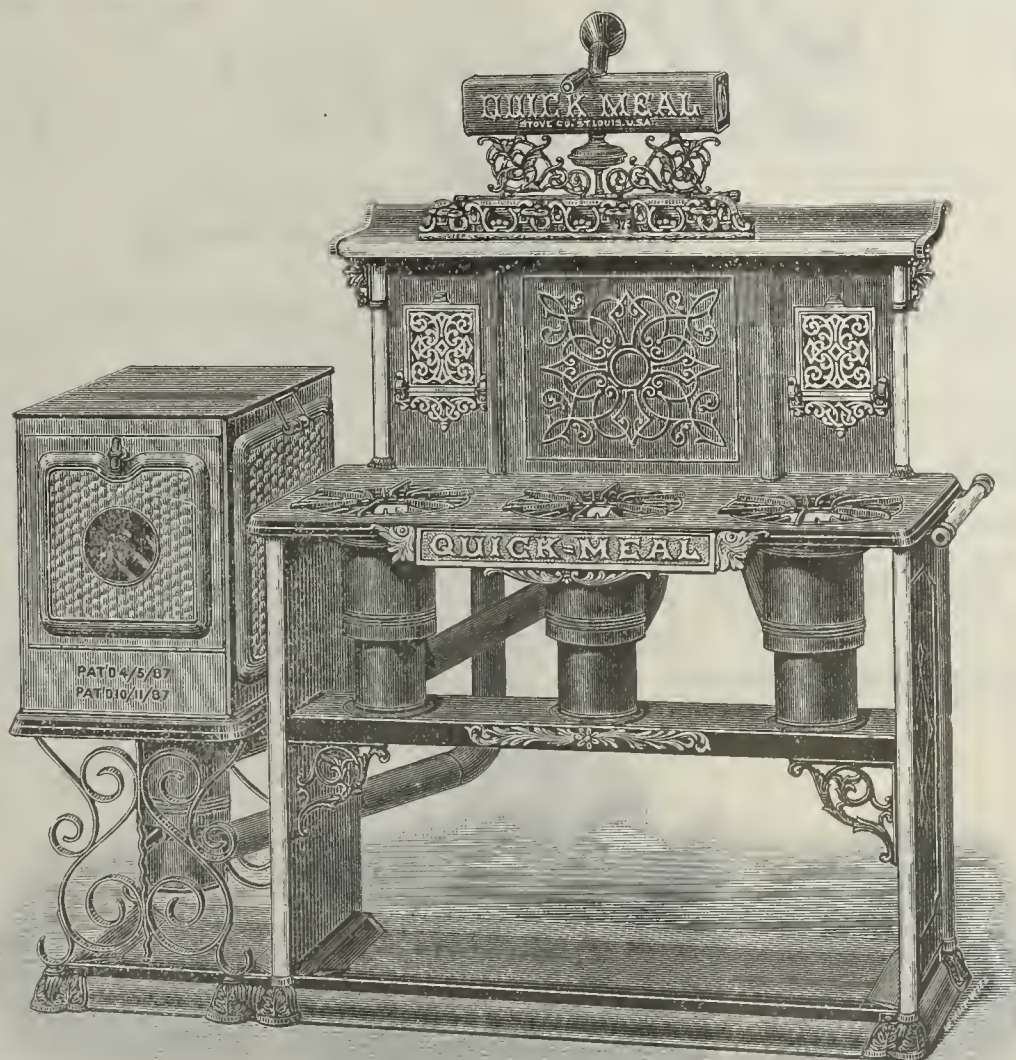
MANUFACTURERS of the FORBES WARM AIR FURNACE.

232 Quarry St.,

PHILADELPHIA, PA.

QUICK MEAL

Gasoline Stoves.



THE success of "Quick Meal" Evaporating Stoves is unquestioned. They have stood the test of years. Their Burners are perfect, simple and durable, easy to regulate and easy to keep clean. The assortment is larger than the largest made. Their design is now prettier than ever and their finish unsurpassed. There never was a Gasoline Stove prettier, better or simpler than the "Quick Meal" Evaporator. Their enormous and ever increasing sale tells the tale.

Correspondence solicited in unrepresented territory.

P. S.—"Quick Meal" Steel Range sales are double of what they were a year ago. Do you sell them? If not, you are not selling the Best.

RINGEN STOVE CO. SAINT LOUIS

With pardonable pride we refer to our record and

WISH YOU

A Happy and Prosperous New Year

Trusting that you will share in the prosperity which is in sight.

A
Twentieth
Century
Line.

Magee

RANGES & HEATERS

A
Twentieth
Century
Line.

ALWAYS RECEIVE HIGHEST AWARDS WHEREVER EXHIBITED

RANGES

Portable or Brick Set, Single or Double Oven, Cast Iron, Steel, French. ALL Sizes: Family, Hotel or Restaurant, Gas, Coal, Wood.



Facsimile of Medal's
Supreme Award,
Chicago.

HEATERS

Furnaces, Wrought or Cast Iron, Warm Air alone or in Combination. Steam and Hot Water Boilers, Round or Sectional. Tank and Laundry Stoves, Parlor, Hall, Store and All Cast Heaters.



Mass. Charitable Mechanics
Association.
Only Gold Medal in 1834.
Only Gold Medal in 1890.
Only Gold Medal Certificate
for continued superiority
in 1857 and 1893.



Facsimile of Medal of Honor,
Accompanying
Highest Award, International
Exhibition, Philadelphia,
A.D. 1876.



Our Latest Triumph:
Gold Medal.

Highest Award,
Paris, 1900.

"THE NEAREST PRESENT APPROACH TO WHAT COOKING AND HEATING APPARATUS SHOULD BE."—Judges' Report.

If interested in good goods, if you would be in good company—whatever your requirements in Cooking and Heating Apparatus—drop us a line or, better still, *Call and See Us*,

MAGEE FURNACE COMPANY,

19 to 27 Friend Street, }
32 to 38 Union Street, } BOSTON, MASS.

The Largest and Most Complete Line Under One Name in the United States.

Ideal Boilers.



Ideal Invincible Water Boiler.

IF WE HAVE NOT

had the pleasure of doing business with you, we feel it is because you have not given our Ideal Boilers and American Radiators the calm consideration to which they are entitled in view of the tremendous efforts we have put forth to place them distinctively in advance of any other goods upon the market. May we not send you our latest catalogues and prices?

American Radiator Company

✓ ✓ ✓ ✓ ✓

Send for our
1901 catalogue—
profusely illustrated.

AMERICAN RADIATOR COMPANY

**Lake and Dearborn Streets,
CHICAGO.**

New York,

Philadelphia,

Buffalo,

St. Louis,

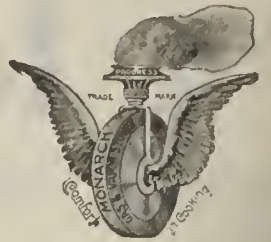
Minneapolis

and

Denver.



Season of 1902



Will reveal many remarkable improvements in the

MONARCH LINE OF

Vapor and Oil Stoves

AND

Asbestos Lined Ovens

from the most complete Family Range to the cheapest low Junior. This line has always been given the preference wherever shown, and for 1902 are so far ahead of any other production that the Dealer has but to show them. They sell themselves.

Our New Catalogue

is the finest piece of typographical art ever produced representing this class of goods and should be in the hands of every Dealer. **FREE.**

THE MONARCH STOVE & MFG. CO.,
MANSFIELD, O.

BRANCHES: { 284-6 Pearl St., N. Y. 67 Lake St., Chicago.
107 N. 2d St., Phila. 191 Eagle St., St. Paul, Minn.
203 Wood St., Pittsburg.

H. R. BRUCE & CO., Agents, 419 Pike Bldg, CINCINNATI, O.



JEWEL STOVES AND RANGES..

A Complete, Well Advertised Line:
Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



CATALOGUES SHOWING

GAS RANGES
 CAST RANGES
 STEEL RANGES
 STEEL COOKS
 HOT PLATES
 CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

A Source of Comfort



during the cold blasts of winter can be found in a good furnace. Not only does the **user** enjoy it, but the **dealer** derives great satisfaction as well as profit from it.

Good Furnaces are to be found at reasonable prices if you look in the right place.

This advertisement is intended as a guide to point you to the right place. If you would be convinced try it and see.

Faultless Furnaces.

Hero do.

Comfort do.

Rival do.

The Graff Furnace Co.,

208 WATER ST., NEW YORK.

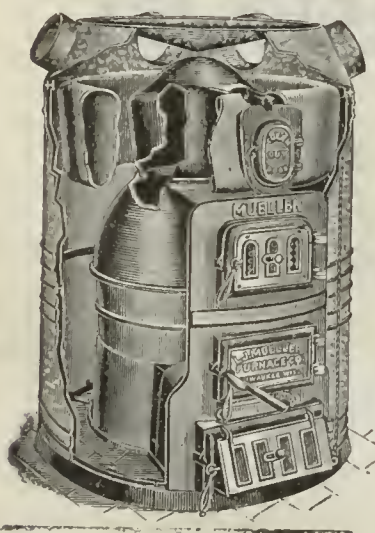
The DANGLER STOVE & MFG. CO.,

are pleased to inform the public and trade generally that they are prepared to furnish a line of Gasoline Vapor and evaporating Stoves, Blue Flame Wick and Wickless Oil Stoves and Gas Ranges, Stoves, Cookers, etc, for the season of 1902 with such marked improvements and changes that will make them the LEADERS for the coming season.

Will furnish new catalogs by January 1st. Correspondence solicited. We are prepared to arrange for territory.

THE DANGLER STOVE & MFG. CO.,
CLEVELAND, - - - OHIO, U. S. A.

Return Flue Radiator. All Cast.

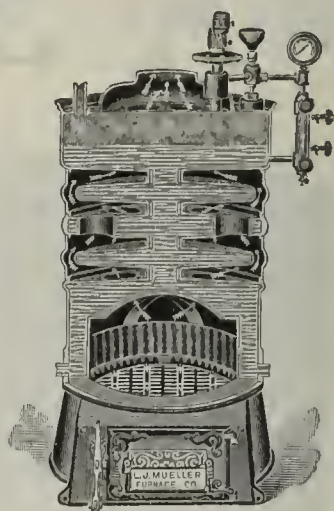


MUELLER FURNACES AND BOILERS BRING CUSTOMERS To Dealers Handling This Line.

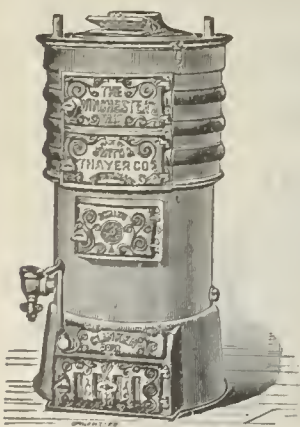
ALL STYLES FOR ALL KINDS OF FUEL.

Get Our Special Register Offer.

Everything in the Heating Line.



190 Reed St., L. J. MUELLER FURNACE CO., Milwaukee, Wis.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

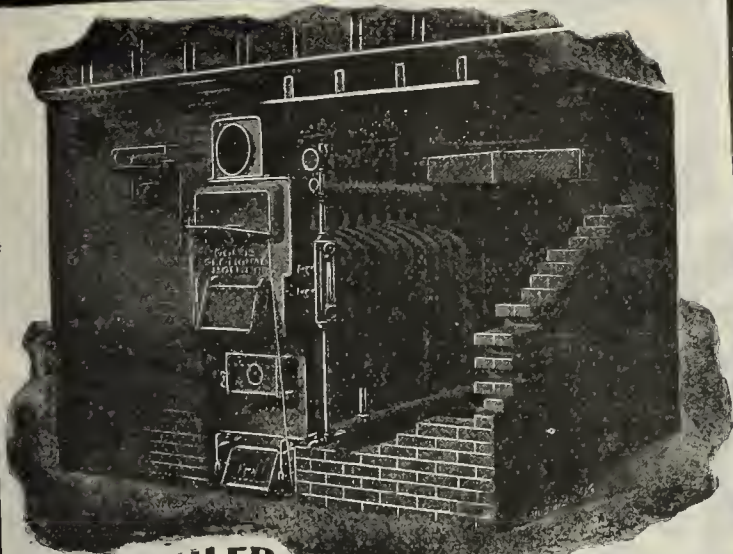
HEATER.



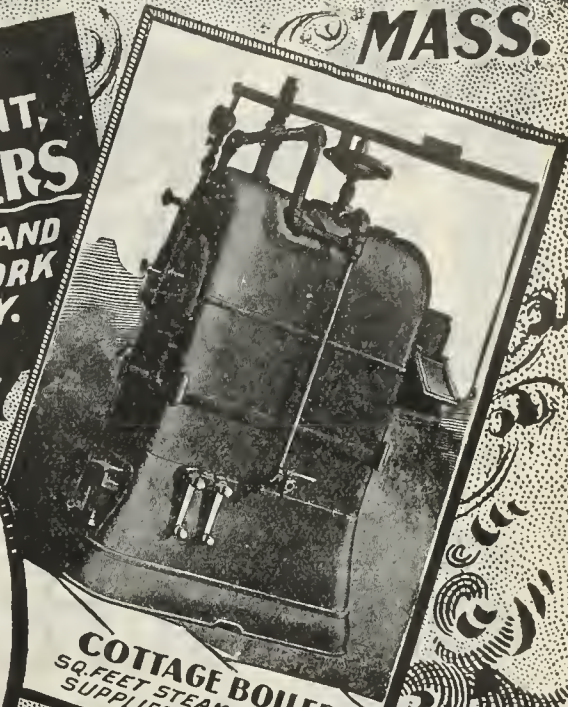
THE H.B. SMITH CO.

WESTFIELD,
MASS.

EUROPEAN
AGENT,
AUG. EGGERS
BREMEN AND
NEW YORK
CITY.

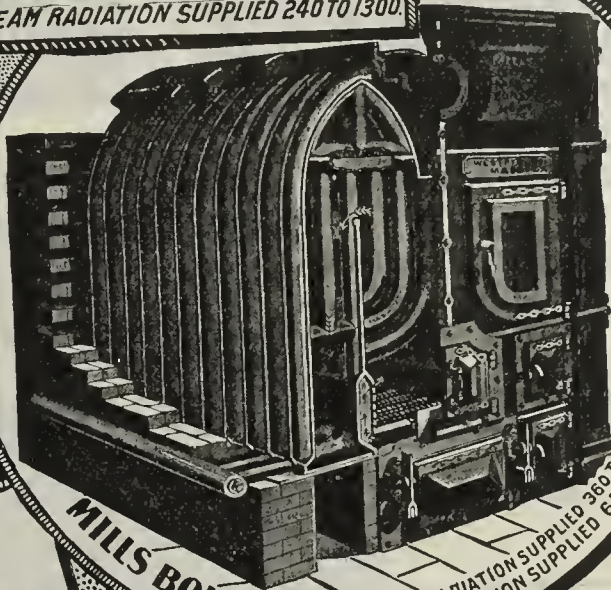


GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

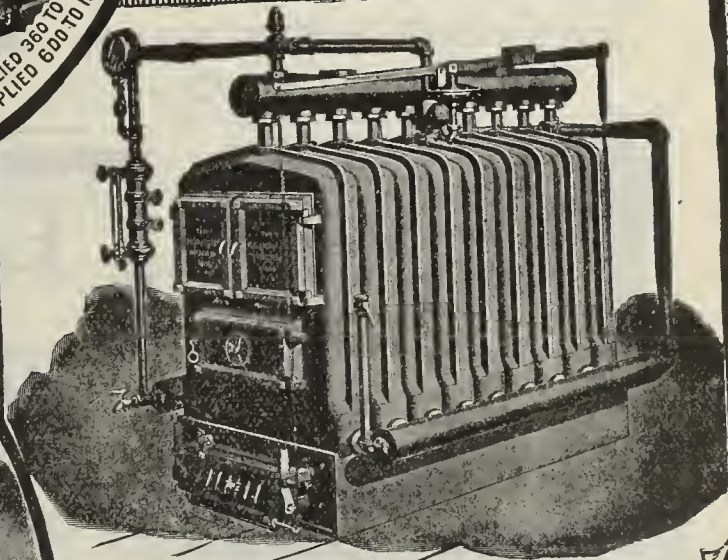


COTTAGE BOILER,
SQ. FEET STEAM RADIATION
SUPPLIED 100 TO 550.

PACIFIC
COAST
AGENTS,
DUGAN BROS.
SAN FRANCISCO
CAL.



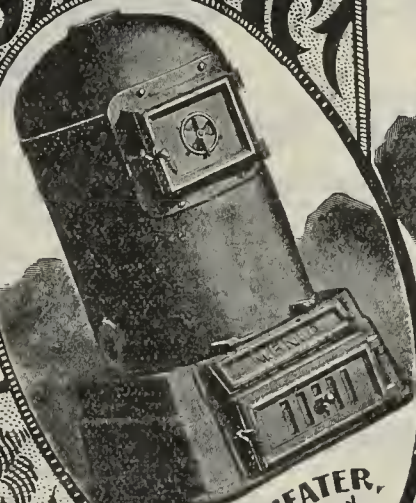
MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



COTTAGE BOILER,
SQ. FEET WATER RADIATION
SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

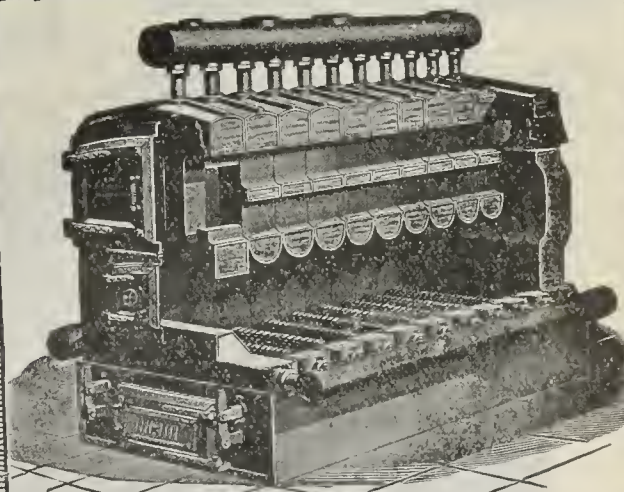
Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

SALESROOMS:

133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

Royal Heaters.

MANUFACTURED BY THE

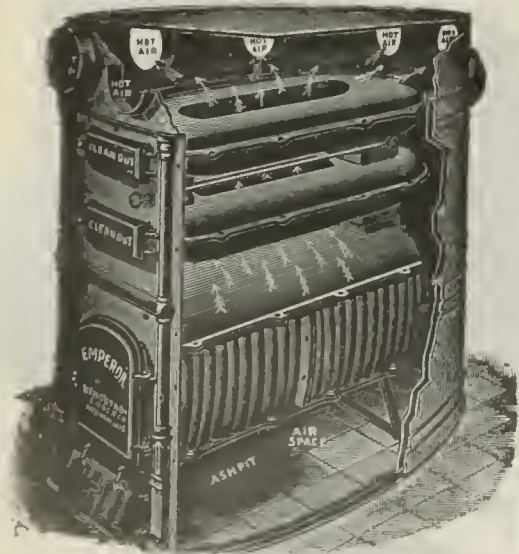
HART & CROUSE CO.

UTICA, N.Y.

ALL THE LEADING LINES OF
STEAM, HOT WATER & HOT AIR,
 FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
 COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO,
 ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces.
 Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros & Co.

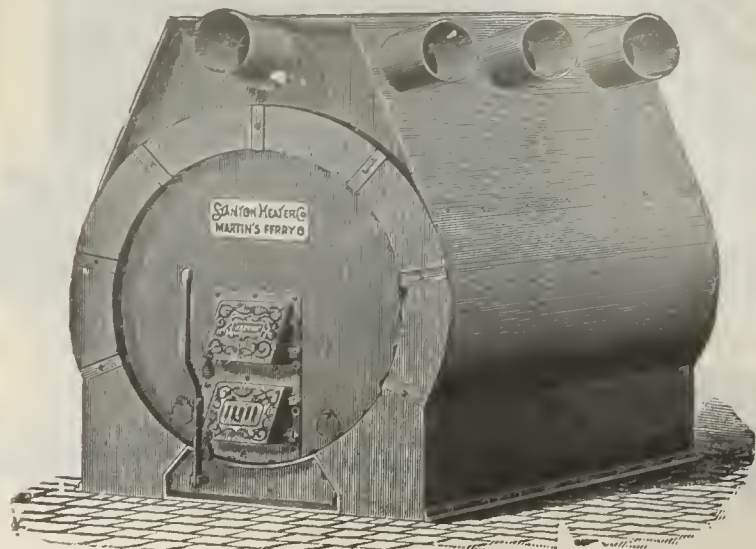
NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASING.

The cut herewith represents the *Stanton Seamless Heater complete*, with portable casing. The inside Casing Sheet is made of No. 24 cold rolled sheet steel. The outside casing is made of No. 24 Aluminum-coated sheet steel, which is anti-rust and will stand a much higher degree of heat than it will ever be subjected to before tarnishing. Heavy asbestos paper is placed between inside and outside casing, which prevents heat from radiating into cellar. This coating will not peel off, but remain pretty and white

SEND FOR CATALOGUE.



THE STANTON HEATER CO.,
 Martin's Ferry, Ohio.

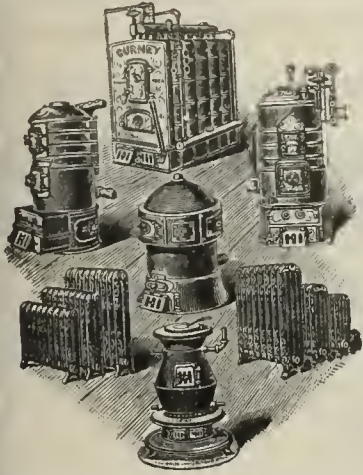
See Our Advertisement Next Week.

Even members of the same family are not always alike in virtue or ability, yet the

Gurney Heaters

Are of uniform excellence. In all of them the heating surfaces are so arranged as to produce a maximum of heat from a minimum amount of coal.

All are made from the best grades of iron, have the most efficient types of grates, and embody all the latest improvements. "Bright Idea," "Doric," and "400 Series" Steam and Hot Water Heaters are thus equipped. Sales of any of them will enhance your reputation. Would you become an agent? Let us hear from you.



GURNEY HEATER MFG. CO.,

74 Franklin Street, Boston.

111 Fifth Ave., New York City.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

If It's a Question

of coal consumption or heat production, we can aid you and give you some points worth thinking about.

THE BENGAL FURNACE

burns less fuel and produces more heat than any other furnace its size.

WRITE FOR OUR BOOKLET.

SECURE A BENGAL AGENCY AT ONCE.

FLOYD, WELLS & CO.,

ROYERSFORD, - - PA.



Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover and Elm Sts., BOSTON, MASS.

1000 REGULATORS SOLD IN EIGHT WEEKS.

THE WIRETON TIME REGULATOR.

We want your business and are bound to have it if price, prompt delivery, and courteous treatment is any inducement to you.

The THREE requirements for a first-class furnace are ALL Incorporated in the

New Quaker Furnace.

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and ECONOMY in REPAIRS.

DROP US A POSTAL AND WE WILL TELL YOU ALL ABOUT IT.

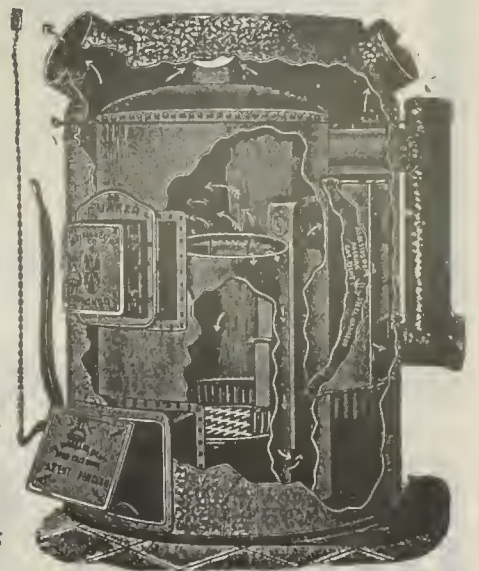
Our furnaces and specialties are great levers for pushing business your way. Exclusive agencies given.

WIRETON HEATING CO.,

Main Office and Works, Blue Island, Ill. Chicago Office, 40 Dearborn St.



A Marvelous Seller.
Will automatically turn on the draft of any furnace, steam or hot water boiler

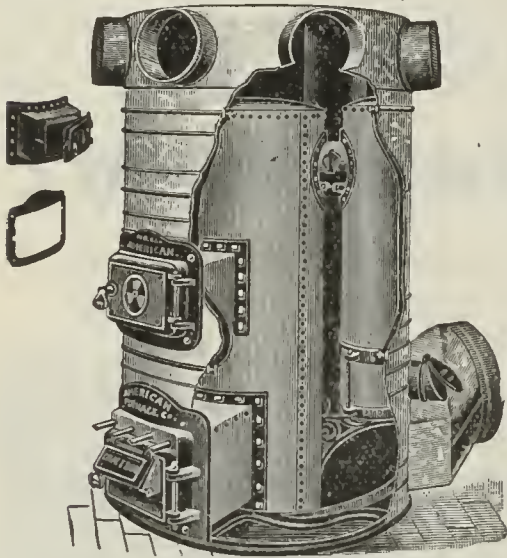


If you have three (or a dozen) first-class ranges from as many different manufacturers, look them over if you don't already know how they are built. Probably one will have a sheet flue on the flue end, with an uptake flue on the back of the oven. This construction heats all of four sides and a part of the fifth. The others have the old reliable divided flue on the flue end, the division (or the flue strip) extending under the bottom oven plate, to within 6, 7, or 8 inches of the front oven plate, the gases passing around this back to the right half of the flue end. This construction heats only four sides of the oven. The "HOME WINTHROP" heats ALL OF FIVE SIDES of the oven; the divided main flue in on the back of the oven, with an auxiliary sheet flue on the flue end. The top, bottom, fire end and back of the oven are heated more evenly and with less fuel than is possible with any other construction.

	8 x 20 or 9 x 20
The Oven measures.....	20 x 20 x 12½ inches.
Fire Box INSIDE Coal Linings.....	17⅛ x 7¼ x 7⅜ inches.
Ash Pit.....	17⅜ x 18 x 4½ inches.
Fire Box for Wood.....	26 x 7¼ x 7¼ inches.

The Water Front is 19 inches long, 7¼ inches deep. The dust flue takes ALL the dust away, even if the draft slide is open when you shake the grate. The Ash Pan covers ALL of the under surface of the grate. If you are selling some other good range, you can claim it will do a stated amount of work with less fuel than any other range, but you can't show any good reason for your claim. If you sell the "HOME WINTHROP" you can show why it will do the work with one-third less fuel than any other range, and your customer, after trial, will substantiate your claim at any time you may have occasion to ask him to do so.

DIGHTON FURNACE CO., TAUNTON, MASS.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

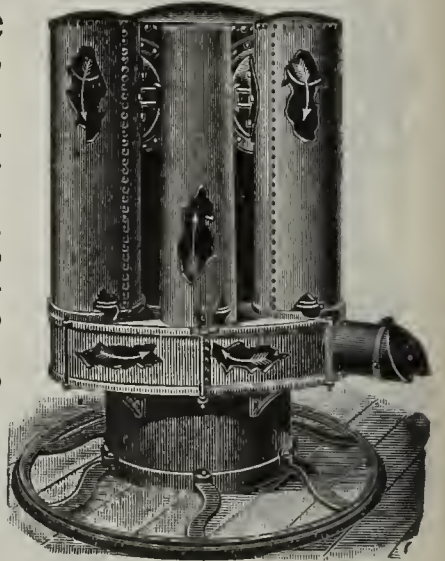
Has come to us through watching the doings of dealers throughout the United States.

We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,
1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it

Your Guarantee is Good,

If backed up by our line. We make many kinds and sizes of steam and hot water boilers, and you as a dealer ought to know all about this line. Let us send you our printed matter and post you on the standard line. Write to-day.

KEWANEE BOILER COMPANY

KEWANEE, ILLS.

BRAND STOVE CO.

**STOVES, RANGES and
FURNACES.**

SEND FOR CATALOG.

MILWAUKEE, WIS.

They regulate
heat in residences,
offices, stores,
mfg. plants.
Guaranteed.

...Wanted...

Mechanics familiar with the installation of house heating furnaces
or boilers to sell and put up

No electricity
or compressed air.
Simple as
a heavy spring
motor can be.

SPRAGUE *AUTOMATIC* DAMPER and VALVE REGULATORS

Must be of good address and have ability as salesmen. Salary
\$15 per week and expenses. References required.

WRITE THE MANUFRS.,

HOWARD THERMOSTAT CO., Oswego, N. Y.
WEST WATER STREET

They Are
"Coal Savers."

Money Makers
for Dealers.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES and STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY
WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

GILT EDGE FURNACES AND COMBINATION HEATERS.

Registers, and Tin and Galvanized Iron Furnace Fittings.

MANUFACTURED BY

R. J. SCHWAB & SONS CO., = Milwaukee, Wis.



CLAD'S Hot Water Stove.

PRICE-LIST ON APPLICATION.

V. CLAD & SONS,
MANUFACTURERS OF
French Ranges and Broilers,
Twelfth Street below Locust,
PHILADELPHIA.

"TORRID HEATER."
FOR STEAM OR HOT WATER.

It is Practical in Design.

It is Safe, Being Tested to 200 Pounds.

It is Easy to Manage and Keep Clean.

It is Durable.

It is Sectional and Easily Handled.

It has No Packed Joints.

It is Self-Feed or Surface Burning.

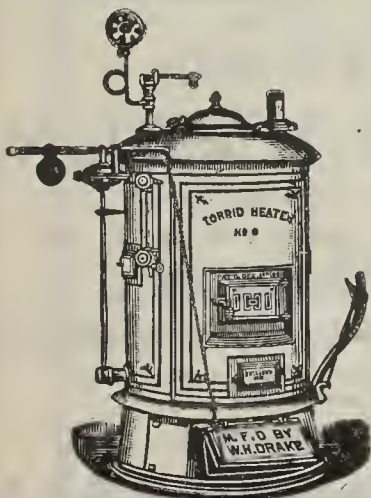
*It has the Torrid Patent Rocking and
Dumping Grate.*

It is Low in Price.

SEND FOR CATALOGUE.

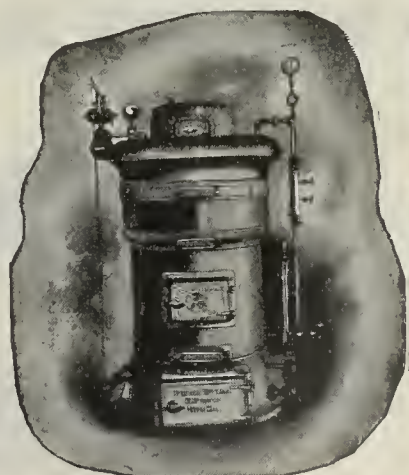
MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St.
NEWARK, N. J.
Factory: Hackettstown, N. J.



Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Touraine Steam Boiler.

LARGE HEATING CAPACITY.

ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
and Heating Engineers.

Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.
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SCRANTON CORUNDUM & EMERY WHEEL CO.

1311-1315 Capouse Avenue, SCRANTON, PA.

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OUR "BLACK DIAMOND"
artificial abrasive wheels
are especially adapted for
The Stone Trade
THEY ARE THE BEST.




HEATING BY COMBINATION STOVES
AND FURNACES.

Suitable for Large or Small
Houses, Stores, Conserva-
tories, Barber Shops, Ho-
tels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

**THE NATIONAL
PIPE BENDING CO**
160 RIVER ST., NEW HAVEN, CONN.

The Champion Hot Water Combination Boilers.

They Fit Any
Furnace.

Base section when
used without ring
sections.



Ring Section.

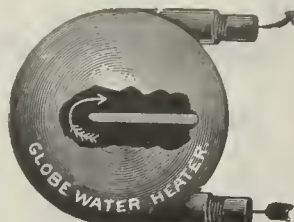


These Boilers are made in three sizes
diameter, and from 100 to 600 square feet
radiation capacity.

Will heat those cold rooms, or an ad-
dition to the building. Will increase the
capacity of any furnace. Are cheaper
than coils and will do more work.

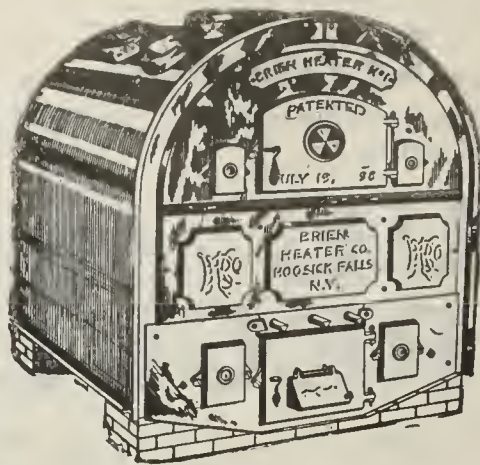
GLOBE WATER HEATER

Attached to any
Furnace will
heat water for
domestic use.



Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., - - - Chicago, Ill.

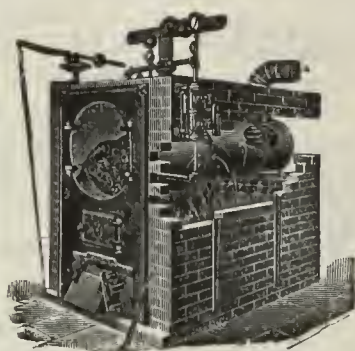


Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.

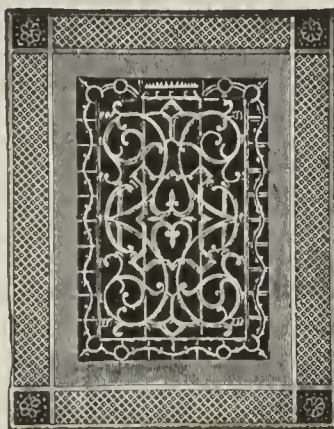
BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.



Vance Boilers.

The most economical Steam and Hot
Water Boiler on the market. Write
for Catalogue and Price List.

VANCE BOILER WORKS,
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REGISTERS.


On account of the very large in-
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ness we were crowded for room, and
have therefore sold our *Register* busi-
ness and patterns. We have left a
small stock of *Registers* and *Venti-*
lators, which we will sell at attractive
prices.

THE CLEVELAND FOUNDRY CO., - Cleveland, Ohio.

AN OBEDIENT CHILD MINDS NO
BETTER THAN A
RICHMOND
HEATER.

IT ALMOST TAKES CARE OF ITSELF.
IT HEATS YOUR HOUSE FROM CELLAR
TO GARRET WITH LITTLE FUEL.

Write for Catalogue.
Richmond Stove Co., Norwich, Conn.




CABINET PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enamelling, etc.

Made in six sizes, single and double, for coal, wood,
natural or artificial gas.

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The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

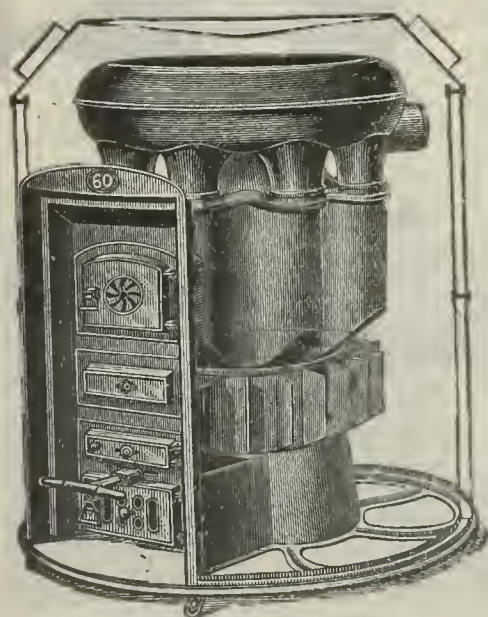
HOT-AIR AND COMBINATION AIR AND

WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN



Imitation is Flattery.

Cory's All Cast FURNACES

HAVE BEEN COPIED
BUT NEVER EXCELLED.

An Absolutely Gas Tight Furnace
Without Bolted Joints.

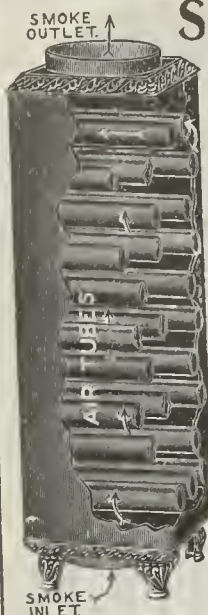
UZAL CORY & CO.,

210 WATER ST., NEW YORK.

Established 1847.

Independent

Square Radiators



Radiating Surface
Right.

Look Right.

Price Right.

All Right.

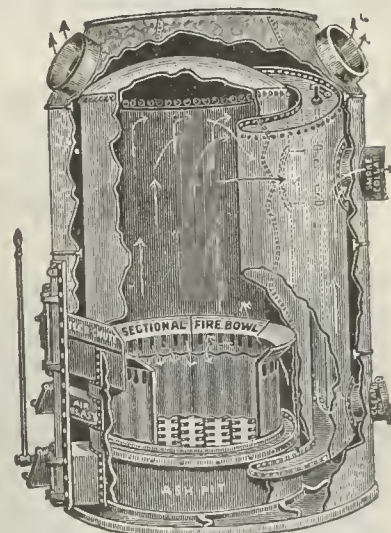
If you want the latest in
Radiators, ask us.

Independent

Register Co.,

152 Champlain St.,
CLEVELAND, OHIO.

The LENNOX



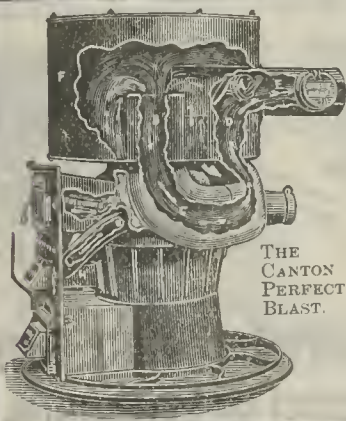
Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

East Frederick St., Marshalltown, Iowa

CATALOG FREE.



THE
CANTON
PERFECT
BLAST.

CANTON PERFECT BLAST AND OAK WARM AIR FURNACES

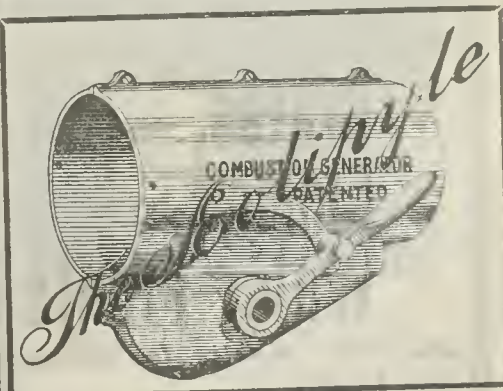
Heavy Castings, Tubular Radiator,

Large Secondary Radiator,

A Perfect Blast,

ALL INSIDE THE CASING.

THE BONNOT COMPANY, Canton, O.



Saves Coal, Increases Heat,
Keeps Temperature Even,
Prevents Escape of Coal Gas,
Reduces Labor,
Avoids Sifting Ashes,

When Applied for Domestic Use
to Smoke Pipe of

House Furnace,
Hot Water Heater,
Low Pressure Boiler,
Stove or Range.

Æolipyle Company,

237 Water St., New York,

Tel. 1849, John.

U. S. A.

KRAMER BROS., DAYTON STOVE REPAIR WORKS

DAYTON, OHIO.

Repairs for 40,000 Stoves

Made from Original Castings and Made to Fit.

NEW CATALOG JUST OUT.

A TRIAL ORDER WILL MAKE YOU OUR CUSTOMER.

Registers and Ventilators

Send
for
Prices.



Seavey Mfg. Co., : : BOSTON, MASS.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts
a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or
Envelopes sent upon application.

Largest Jobbers in New England.

HENRY N. CLARK CO.,

56 and 58 Union St.,

BOSTON, MASS.

When in want of

Grates,
Linings,
Water Fronts

and other repairs for stoves
and ranges

YOU CAN'T DO BETTER

than to send us your orders.

BEAR IN MIND

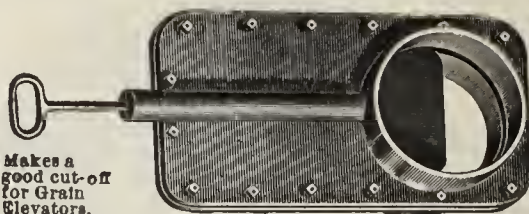
that we can furnish repairs
for any of Barstow's and
Spicer's Stoves promptly
and at lowest prices.

SEND US A TRIAL OR-
DER, you will not regret it.

A. J. MAGOON & SON,

313 WEYBOSSET ST.,

Providence, R. I.



Makes a
good cut-off
for Grain
Elevators.

IMPROVED
WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

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NEW HAVEN, CONN.

MICA

EUGENE MUNSELL & CO.

MINERS & IMPORTERS

NEW YORK. CHICAGO
218 WATER ST. 117 & 119 LAKES

SELECTED
MICA
ONLY.

Prepared expressly for the Stove and
Hardware Trade.

Two Grades: "North Carolina"
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PRICE LISTS AND DISCOUNTS SENT ON
APPLICATION.

THE PALERMO MICA CO.,

115 Beekman St., New York.

MICA

Specially Prepared for the
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OHIO MICA CO., CANTON, OHIO.

THE S. & S. PATENT
Stove Pipe Thimble

Locks the Pipe from
Pulling Out, and from
Pushing In and Closing
the Draught. Will last
a lifetime. Nothing to
wear out, and costs but
a trifle. Send for
sample and prices.

City Forge and
Iron Works,
DAYTON, OHIO.

THE GEORGE W. COPE
Stove Pattern Works.

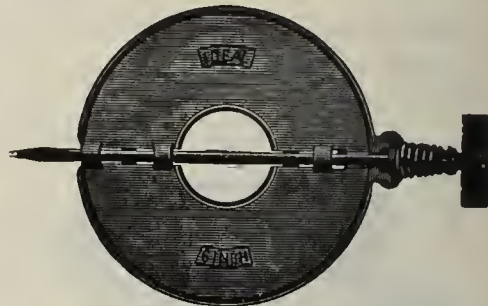
ORIGINAL, ARTISTIC AND
PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,
DETROIT, : : MICH.



DO you want
Stoves and
Heaters that are
easily sold and
STAY SOLD? We have
been very successful in de-
signing patterns for such.

THE GOBEILLE PATTERN CO.,
CLEVELAND, OHIO.

IDEAL DAMPERS,
COVER LIFTERS

AND POKERS



HAVE NON-HEATING
HANDLES OF ELEGANT
DESIGN AND FINISH.
THEY ARE THE BEST.

STOVER MFG. CO.,

164 RIVER ST.,
FREEPORT, ILLS.

SHINES FOR ALL

It is the polishers' friend, and
will polish anything.
Write for free sample
to

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ington St.,
Ind'p'l's,
Ind.

GEO. W. HOFFMAN

The Milwaukee Pattern Works.
Ornamental and Stove Patterns.

Sketches and Designs for Stove Work
of all kinds.

Correspondence Solicited.

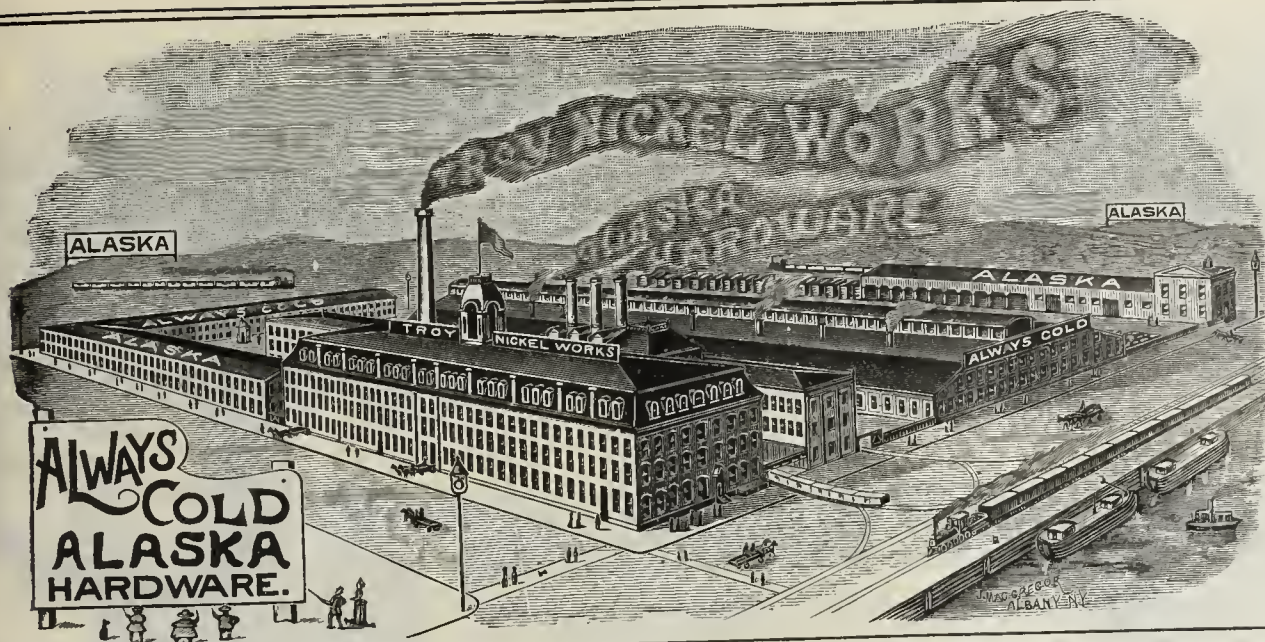
505-507 Cedar Street, MILWAUKEE, WIS.

ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers,
expansion tanks and boil-
ers with copper tube coils
inside for heating water
by steam.

L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.



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TROY NICKEL WORKS,
ALBANY, N. Y.

Cable Address, (Nickel.)

FIRE BRICK LININGS

For all Stoves, Ranges and Heaters.

PRESBREY STOVE LINING CO.,

TAUNTON, MASS.

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBIDGE. N. J.

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HANDLE THE BEST: CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.

Bridgeport, Conn.



The Honest Merchant

making quality his leading feature
and honest values his trade-mark,
is on the sure road to success.



60 Wabash Ave.,
CHICAGO, ILL. **Rutland Fire Clay Co.,**
NORTH EAST, MD. RUTLAND, VT.



"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, **DOUBLE LOCK SEAM** in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETT'S ELBOW CO., Ltd., - - **Waverly, N. Y.**



The YANKEE Hot Air DAMPER (Improved All Steel.)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of 1/4 inch cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.



It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

Sizes: 6, 7, 8, 8 1/2, 9, 10, 10 1/2, 11, 12, 12 1/2, 14 and 15

NEW YORK: A. L. Canfield, 284-286 Pearl St.

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PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works, - Troy, N. Y.

STOVE BANDS

—AND—

RINGS.

SPECIAL TUBING

Cut to Length and Plated.

FLAT STRIPS & CORNERS.

SPECIAL

PUNCH

PRESSWORK

SOLICITED.

Quality and Finish the Best.

The Kirk Manufacturing Co.,

TOLEDO, - - - OHIO.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

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36 to 46 South Fourth Street, Brooklyn, L. I.

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STOVE REPAIRS WATER FRONTS

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. **WHY?** Because we have the stock on hand.

Repairs for 20,000 different stoves and furnaces.

WRITE FOR CATALOGUE.

H. E. HESSLER CO., Syracuse, N. Y.

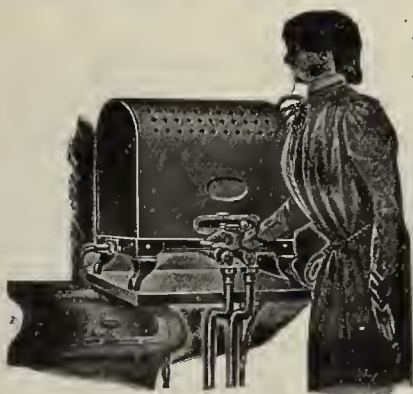
NICKEL PLATING

ZUCKER & LEVETT
& LOEB CO.

526 TO 530 WEST 25TH ST
NEW YORK, U. S. A.

SEND FOR CATALOGUE OF
NICKEL & ELECTRO-PLATING
SUPPLIES & POLISHING MATERIALS.

OUTFITS.

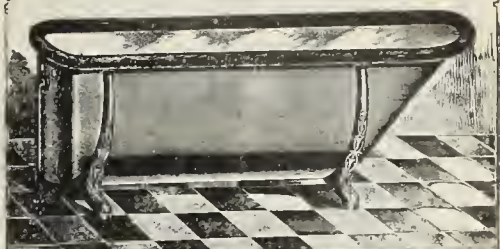


THE VICTOR INSTANTANEOUS WATER HEATER

Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

Send for Descriptive Circular, Prices, Discounts, Etc.

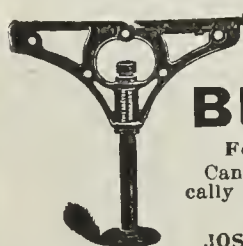
W. J. ADAM. - - Joliet. Ills.



Day Metallic Manufacturing Co.,
DETROIT, MICHIGAN,

Manufacturers of

Steel Enamel and Steel Glad
BATH TUBS and HEATERS.



BOSTON
ADJUSTABLE
BRACKET

For Sinks and Trays.
Can be adjusted both vertically and laterally.

Send for Circular.
JOSEPH H. YOUNG, Boston.

PIONEERS **LEADERS**

LOW SPEED DYNAMOS.
NICKEL ANODES, LACQUERS.

NICKEL PLATING OUTFITS

BUFFS.
CYANIDE POTASH.
TURKISH EMERY.
POLISHING MACHINERY.

THE HANSON & VAN WINKLE CO.
NEWARK CHICAGO NEW YORK

Leather and Rubber WASHERS,

Machine out, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.,
200 Ruggles St., Boston, Mass.

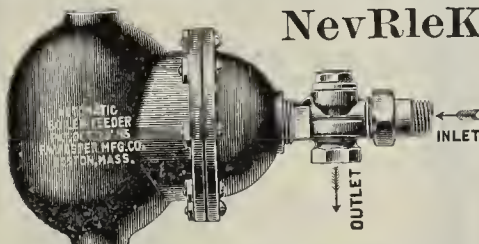
Trimo Giant



This Chain Pipe Wrench has interchangeable jaws. Improved method of holding and releasing chain. No locking. Send for catalog.

TRIMONT MFG. CO., Roxbury, Mass., U.S.A.

FOSTER'S NevRleK



BOILER FEEDER.

Our Booklet tells all about it.
F. W. FOSTER MFG. CO.,
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GOLWELL LEAD CO.,

63 Centre Street, New York.

Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT.

And Sellers of

Everything You Want for Plumbing.



GALVANIZED
STEEL and
WOOD
TANKS.

All sizes and shapes.
J. H. EDWARDS,
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To Estimate Radiation.
To Plan a Hot Water Job.
Size of Flow and Return Pipes.
One and Two Pipe Steam Work.
Heating with Exhaust Steam.
Blower System of Heating.
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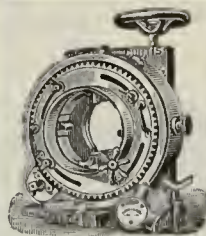
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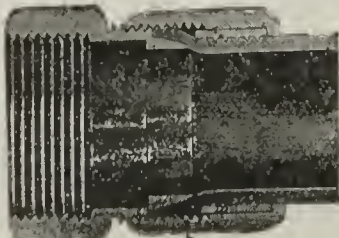
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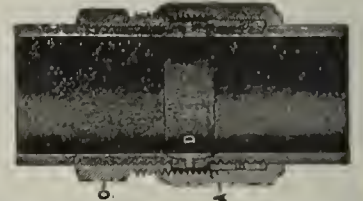
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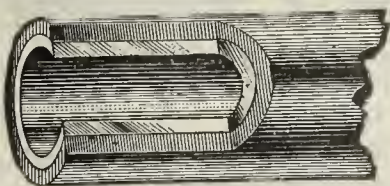
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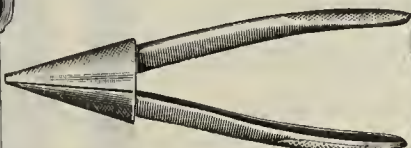
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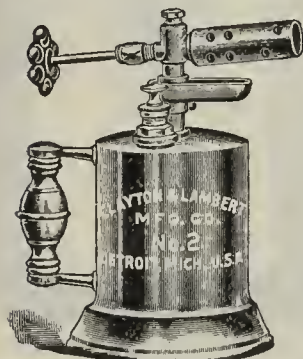
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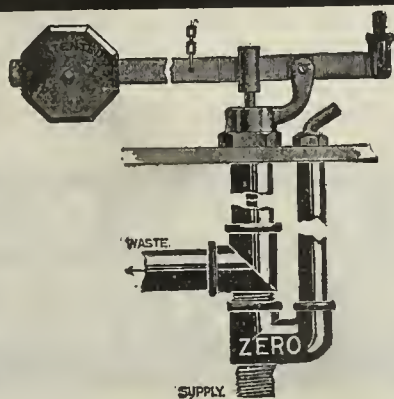
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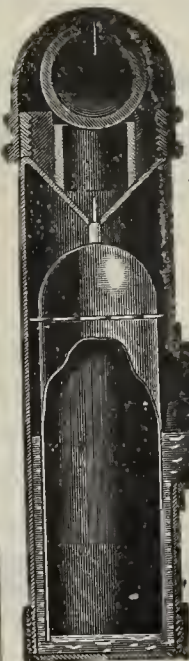


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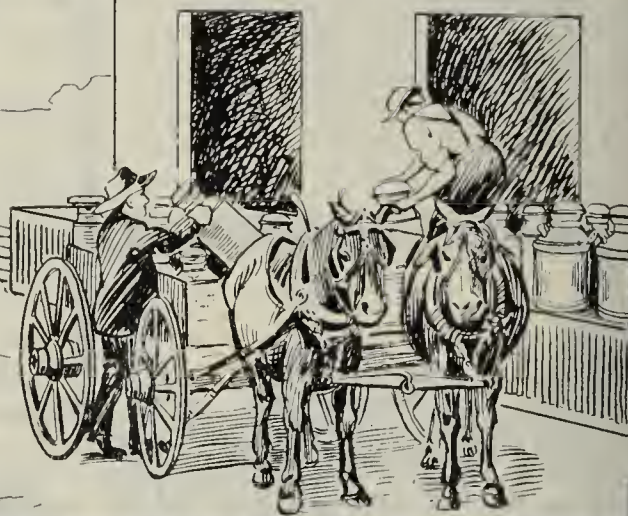
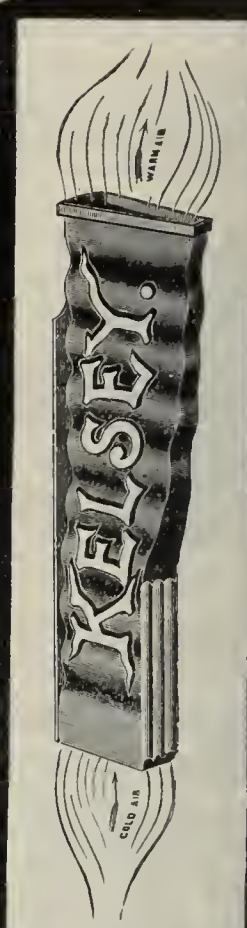


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NEW YORK AND CHICAGO.

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The Holiday Trade.

The general prosperity which the year just closing has brought to the people of this country is strikingly reflected in the great volume of business that has been done by merchants who cater to the holiday trade. The stores have been thronged by greater crowds than ever before, and it is a matter of general comment that the goods called for by the Christmas purchasers generally were of a considerably higher and more expensive class than heretofore. Manufacturers and retailers of holiday goods have been pushed to the utmost to meet the demand, and in many instances have found it impossible to satisfy the pressing requirements of their customers. This feature has been the only cause of complaint. Aside from the increased volume of business, prices in general have been satisfactory, and the margin of profit to the manufacturer and the merchant has probably been better than the average of past seasons. The beneficent spirit of Christmas has prevailed in full force among the eager crowd of liberal buyers who have thronged the streets and stores of the city in greater masses than ever before. The general prosperity is further demonstrated by the great volume and variety of the merchandise which has filled the warehouses and counters of the storekeepers. The finest productions of art, science and literature, as well as the more material necessities of life, have been offered in prodigal abundance to purchasers, and have been eagerly secured, even by those who ordinarily have had to content themselves with less costly wares. It has been the privilege of the many rather than of the few at this prosperous season to indulge in the luxury of buying and making gifts worth the having. In this reign of prosperity and satisfaction we trust all of our readers have had a full share.

Wireless Telegraphy Up to Date.

The close of the first year of the twentieth century has seen the beginnings of a remarkable development, if the statement of Signor Marconi that he has succeeded in telegraphing across the ocean without wires be substantiated. The experiments made a short time ago with the view of sending a message from the coast of Cornwall, England, to Newfoundland, while giving a promise of remarkable results when the system and apparatus used by Marconi are more fully perfected, were not so conclusive as to satisfy electricians and scientific men generally of the actual success of the system. Electricians believe in Marconi's ability, and have absolute faith in his integrity, but they are not yet convinced that the inventor may not have deceived himself in regard to the

fact of messages having reached him over the 2000 miles which intervene between the two continents. They call for something more definite than has up to the present been presented, and Marconi promises that the proofs shall be given to them in due course. The importance of Marconi's feat, if it shall be proved to an absolute certainty, cannot be overestimated. He has already successfully sent wireless messages with ease over a distance of more than 300 miles, and he claims that, with his improved apparatus, the principles of his discovery can be readily applied to far greater distances than that. The scientific world and the public at large will await with intense interest the outcome of the further experiments that are to be made in this field by the eminent discoverer.

The Car Shortage

The interruption of business caused by the shortage of cars continues as great as ever. A number of manufacturing establishments have been obliged to close down in the past week or two, owing to the impossibility of obtaining supplies of fuel. Many of the blast furnaces in the Pittsburgh district and in the Central West have been banked down for days at a time through the lack of coke, and iron manufacturers are also seriously hampered in their efforts to ship their product in response to orders. The car famine is about the only adverse feature of the present situation. The demand for all classes of goods, particularly in the iron trade, is of immense proportions and shows no signs of let up. Under the circumstances, it is peculiarly aggravating to both producers and consumers that transportation facilities should be so inadequate when business is so unusually brisk. Unfortunately, no early relief from this inconvenience is in sight, although the various railroad companies and car building concerns are doing their best to get out new rolling stock. The situation caused by the shortage of transportation facilities is working considerable hardship to a number of the manufacturers who have unfilled orders on their books, and also to the workmen who are placed in idleness owing to the enforced closing of the manufacturing plants at a time when they should be in full operation.

Guaranteeing Prices.

This is a season when in the ordinary course of things many goods are sold under a guarantee as to prices in one form or another. A reminder to the manufacturers and the jobbers as well of the manifold mischief of the practice is therefore timely. There is indeed little to be said in favor of the guarantee when the interests of the manufacturers and the trade as a whole are considered, and as it often operates, it falls to be advantageous even to the buyer for whose benefit it has been granted. The inequity of the practice and the disturbance which it causes to the trade are thus forcibly stated by a prominent manufacturer:

A guarantee is a most excellent thing for a buyer who wants to settle for the goods regardless of the seller's wishes. This would be particularly true if he were the only one who had a guarantee. But as a rule guarantees are a most pernicious thing—bad for both buyer and seller; they encourage unfair

dealings and unpleasant relations between the manufacturer and his customer. It is unbusinesslike on the part of the manufacturer, because he will not know what price he is going to get for his goods until payment day comes, and then some competitor makes the price. The market is demoralized, not simply to the manufacturer, but to the jobber as well. The large jobber has no advantage over the man who buys just enough to be recognized as a jobber by the manufacturer; in fact, the small jobber may be unprincipled, or, if fair, he may be very shrewd, and give the matter his particular personal attention, and under a guarantee get a price that the jobber buying several carloads could not get. Should guarantees become general, they might in time become equally general with the jobber selling the retailer, and as the jobber has from 10 to 50 or more accounts on his ledger than the manufacturer, it is easy to see who would be the sufferer.

Some progressive and broad minded jobbers have frankly acknowledged the evils of the guarantee system, and there is ground for hoping that it may under the prevalence of better principles and methods in commercial life be abandoned as unbusinesslike. A firm stand by representative jobbers in opposition to it would be a marked advance and would have much influence in helping to do away with the pernicious practice.

Should the principle of arbitration and conciliation embodied in the formation of the Industrial Department of the National Civic Federation be carried into successful effect, as all who are interested in the welfare of the country earnestly desire, the occupation of the walking delegate and the professional agitator will be gone. Under the new *régime*, which it is hoped to introduce, the settlement of labor troubles will require the negotiations of no middlemen. No place will be found for those troublesome functionaries, and probably none but themselves will be grieved over their disappearance from the industrial arena.

Decline of Individual Dwelling Houses in New York City.

Some interesting statistics concerning the decline in the number of individual dwelling houses in New York have been gathered by the local real estate paper, the *Record and Guide*. In these statistics the number of houses of this character projected each year is shown to have steadily decreased in the past ten years. It was at its highest in 1890, when plans were filed for 835 dwellings, and it reached its lowest point, so far as number is concerned, during the first ten months of 1901, in which plans for only 97 dwellings were recorded at the Building Department. The average cost of such houses, however, has increased very materially. The main cause for the decline in the building of dwellings no doubt has been the erection of so many large new apartment houses, which, in the improved accommodations they offer, compete effectually with private dwellings. A very large number of these apartment buildings have been erected in New York City during the past few years, especially on the West Side, a district that was for long monopolized by private dwellings. These new apartment houses are supplied with all the modern improvements and with many conveniences, and even luxuries, that are practically unattainable in a private house. Furthermore, the greatly enhanced value of land in the city has so materially increased the cost of buying lots for the erection of homes that the building of separate dwellings has been put practically beyond the reach of any but the more wealthy citizens. Residential New York, in fact, has become in recent years a city of apartment houses rather than homes. While the restricted area on which buildings can be erected and the rapid growth of the city's population have made this change inevitable, there are reasons for regretting the change, as tending, in a measure, to obliterate the gen-

uine home life which is fostered by the tenancy of separate dwellings in a city.

Advices from the City of Mexico state that plans have taken definite shape for the establishment there of a permanent exposition of the different manufactured articles which are imported into Mexico, as well as the products of the Republic. The Mexican Permanent Exposition Company, Limited, have just been incorporated with a capital stock of \$300,000, and have been granted a Government concession, by the terms of which the company guarantee to erect buildings for the display of goods, and to keep these in repair at their own expense. The cost of the buildings and the site is estimated at \$300,000. The exposition is to be completed and ready for opening within two years. The Exposition Company are empowered to make a charge for space to the exhibitors, and are required to publish catalogues in Spanish, English, French, German and Italian of all the goods displayed, the Government allowing the company to import such materials as may be needed for the construction of the buildings free of charge, while all imported articles for exhibition can be brought into the country under bond for one year. If not exported at the end of that time they will pay the regular duty.

Efforts are being made by the League for Social Service of New York City to establish a museum for the exhibition of devices and appliances for the prevention of accidents to workmen, similar to an institution of this character that has existed for some time in Amsterdam, Holland, under the name of the Museum of Security. The effect of the Amsterdam museum is said to have been to educate manufacturers and employers of labor in a practical manner as to the value and utility of adopting the various methods and appliances there exhibited, with a view to lessening danger to workmen by accident. The Dutch labor inspectors say that the museum is an excellent object lesson and that it facilitates their work in carrying into effect the necessary safeguards in manufacturing plants, as they can refer any manufacturer who does not see his way clear to providing the necessary precautions against accident, to appliances exhibited in the museum that will fit his case.

By the passage of the Industrial Arbitration bill through the Legislative Council of the colony, the Government of New South Wales has placed a law on its statute books the operation of which will be watched with great interest throughout the world. According to the terms of the law all disputes between employers and employed must be referred to a competent court with power to enforce its orders and awards. The law makes a strike or lockout before or pending such reference a misdemeanor, punishable by fine or imprisonment. The court which will pass upon these disputes will be presided over by a judge of the Supreme Court, who is given very extensive powers, including power to declare a standard wage and to direct that, other things being equal, an employer shall give preference to union over nonunion labor. There is no appeal from the decisions of this court.

It would seem that the limit to the height of the lofty business structures of down town New York has by no means yet been reached, if a report which was current this week is true. According to this report a promoter is trying to organize a realty company to build a 54-story office building on lower Broadway. It is said that plans for the building have already been drawn, and that from the street level to the top of the tower the height will be more than 700 feet. The estimated cost of the building is said to be about \$8,000,000.

The Mexican Central Railroad Company are equipping some of their locomotives with oil burners, and contemplate extending this fuel throughout their system. By the use of oil it is expected that the operating expense item of fuel, which was over \$3,000,000 (Mexican currency) in the last fiscal year, will be materially reduced.

THE PHILADELPHIA STOVE TRADE.

After a period of considerable activity the stove trade in Philadelphia has settled down to the usual holiday period of quietness. With almost all of the dealers and manufacturers the past season has been a most satisfactory one. The volume of general business transacted has been large, and with some it has been called a "banner" year. It has, however, had its disadvantages. Considerable disappointment and loss of sales have been occasioned by the inability to make deliveries on many lines of goods. The need of more molders, in some cases, has hampered the manufacturers of cast goods, while the great scarcity of sheets, due largely to the strike of the Amalgamated Association of Iron, Steel and Tin Workers in the Middle West during the summer months, as well as the increased general demand for that class of goods, has made it impossible for manufacturers using sheets in the construction of their goods to make deliveries in any reasonable sort of time.

Original orders placed during the late summer months were in some cases not flattering. Dealers were said to be rather prone to delay deliveries of goods from two weeks to a month, but since then new business has come along with a rush and, in numerous cases, far exceeding the manufacturers' expectations. We are advised that the various lines of goods have generally been taken quite uniformly, no special lines having particular prominence. Offerings of new goods have met with favor, and large sales of this class have been made.

The January trips of the various representatives of the stove houses are being looked forward to with a view of continued activity, and unless the signs fail there will be no disappointment from that source. The month just past has been reported by many manufacturers to have been the best December so far as business in their respective lines is concerned that they had for a number of years, and, all in all, the trade generally is well satisfied with the existing conditions.

SOFT COAL BURNING FOR DOMESTIC USE.

BY IN TOUCH.

The following editorial on the use of soft coal in domestic cooking and heating apparatus was presented recently in the New York *Herald*:

A Colossal Fortune is Awaiting Him.

The recent unprecedented series of fogs in London has revived interest in the movement for the abolition of the soft coal smoke which is such an important ingredient in the nuisance.

They are getting on. It was only in 1273 that this movement began. Stow chronicles the fact that in that year the use of sea coal in and near London was prohibited as being "prejudicial to human health." A special cable dispatch to the *Herald* this morning notes that at a meeting of great scientists just held to deal with the problem they adopted a resolution iterating the fact in almost precisely the same words—and adjourned.

The London County Council is now studying the matter, and some time in this century or the next will doubtless "report progress." An inventive Yankee ought to go over and patent a contrivance to burn soft coal for domestic use consuming its own smoke and saving the "heat," two-thirds of which now goes up the open chimneys.

Incidentally, we could use a few million stoves of that sort in America, to the delight of householders and the discomfiture of the anthracite trust. The man who produces the right device will reap a fortune that will make Mr. Carnegie's look like 30 cents.

The outside public is not aware of the large amount of time and money that has been expended in this field by inventors and theorists; neither do the trade outside of the soft coal regions know much about its history. While practical manufacturers have worked for years on the problem of constructing stoves for soft coal burning and have spent thousands of dollars, outsiders have also sunk lots of money in the same manner. But the solution of the problem has not yet been accepted, although some very excellent soft coal burning stoves are on the market. How big a field awaits the successful construction is shown by the *Herald* editorial.

It is strictly true that the field for such stoves is im-

mense, as it extends all over the world wherever soft coal is used. The stove manufacturer who has worked this field and watched it carefully has accumulated a stock of information and experience that renders his judgment valuable, and enables him to see the merits of the perfect stove for soft coal combustion. He has failed so far to recognize it in any of the constructions brought to his notice. On the other hand, outsiders have taken the subject up, and after simply seeing a stove in operation under the manipulation of an inventor or promoter have put down lots of money on the representation that a fortune can be reaped from the enormous demand that is represented to them as awaiting the production of such stoves. So far as the promoter's side of the picture is concerned, the *Herald's* editorial confirms the claim as to the number of stoves that could be sold. But as none of the parties referred to have ever seen or known anything about stoves and the intricacies of their manufacture, they naturally presume that all that is necessary is to get up a stove on that line and the profits will roll in.

The following history of one of those operations may be of interest and will not detract anything from the merits of such inventions. It is merely an illustration of what has been experienced in this field: Several soft coal stoves were exhibited privately in New York some years ago, one of which was in the hands of promoters. When another inventor came to town to exploit his stove he also fell in with one of the promoters. This promoter succeeded in getting some rich capitalists interested in the matter, as the principle embodied in the stove was also applicable to steam boilers, &c. So far as getting up the company and obtaining ample means were concerned it was successful. When the business began an expert was engaged at a big salary to get up the stove and put it on the market. But the stove "failed to materialize."

Meanwhile the promoter had mastered the subject of combustion and how to make and sell stoves so well that he proposed to show the stove men that they were "not alive, not in it," as he expressed it. In short, he knew it all. It is to be said to his credit that he had studied the theory and practice of combustion thoroughly, and could give points to the average stove man in talking about it. But when he undertook to make and sell his stove, and incidentally show the stove makers how to do business, it must be said he was a failure.

It might be possible to learn some kinds of business in a day or two, but any one who can master the stove business in so short a time as this promoter claimed to have done it in would be, indeed, a wonder and could command a big salary, for he would revolutionize the business. Now this is what he did do. He put draftsmen to work, got all his drawings out, set the pattern makers to work, and the stove, although time enough has elapsed, is not yet in possession of the public to that degree that they are tumbling over each other to get it. It is estimated that \$50,000 cash was spent on this stove. Of course, this includes the expense account. So far as the principle was applied to power boiler fire boxes it is said to be a success; but nothing is said about profits.

According to the *Herald* editorial, the promoter was on the right track and had a big field for his work, for it makes a bigger claim for it than he did. Is it not a fact that stove makers do not know all the possibilities of the business, judging from the way they sit down on the ideas of others?

There is no question about the field for stoves for burning soft coal without smoke, and not only for those, but for furnaces for steaming purposes. But outsiders who think they can succeed in the stove business and get the fortunes out of it that there may be in it will have to pursue other methods than those recorded.

So far as cooking and heating stoves are concerned, do away with the smoke and soot, or reduce it to a minimum, and they will always be in great demand.

THE WARWICK FURNACE MFG. COMPANY of Massillon, Ohio, have been incorporated with a capital of \$20,000 by W. H. Geiss, D. S. Sauers, H. W. Loeffler, J. N. Merwin and S. T. McMeeken.

VENTILATION IN CONNECTION WITH FURNACE WORK.

BY ANTI COMPRESSION.

The extract from the letter of a correspondent, presented recently in *The Metal Worker*, calling attention to the fact that ventilation is needed in connection with furnace work, heartily meets my approval, and the sooner all furnace men understand this the less complaint they will have in regard to their work. It is a fixed law in nature that two things cannot occupy the same place at the same time. That is to say, when the fire pot of a furnace is heaped full, no more coal can be put on until the ashes are removed from the bottom. From the fact that the coal and the ashes can be seen as substance, and handled in a positive manner, there is no difficulty in getting the most skeptical to admit the correctness of this statement. When, however, difficulty is experienced in heating some room connected with a hot air furnace, the application of this law to such invisible matter as air cannot be discerned by many who do excellent furnace work.

Whenever a furnace is properly supplied with air and has no more hot air pipes leading from it than it can reasonably fill, air should flow in equal volume from all the pipes. When air fails to flow freely from some one pipe, or stops, the investigation for the cause of the stoppage should be conducted along these lines: First, find if the windows fit tight, if weather strips or double sashes are provided, and if there is a ventilating flue, a chimney, or a grate in the room, and if the difficulty is most pronounced when the door of the room is closed. If the windows fit tight and there is no chimney hole, or open grate in the room, and the difficulty is experienced when the door is closed, the solution of the trouble is a simple matter to an experienced man.

VENTILATION.

This is simply the result of the room being full of air and there being no outlet by which the air that is in it can escape, so that it is impossible for warm air to enter. The opening of a door can always be relied upon to start a circulation. Sometimes the desire for privacy will cause the door to be closed. Such being the condition, the furnace man must arrange for the escape of the air that is in the room. In many residences that are fitted with double sashes, the whole heating system operates erratically if there is no provision for the air to escape, but such a condition can be avoided if an open grate with a flue of sufficient capacity is provided in the main hall when the building is erected. The grate, whether there is a fire in it or not, if its flue is beside the furnace flue, will be warmed sufficiently to induce an exhaust current and continually draw from the building a sufficient quantity of air to facilitate the inflow of warm air from every register in the building.

For general use this is essential. Sometimes, however, the furnace man is confronted with difficulty in a building in which no grate and flue have been provided. If there is an unused flue in the chimney, benefit will be derived by running a pipe to it from a register in the floor of the hall. In the absence of such a flue, however, when the furnace chimney has a sufficiently strong draft, it may sometimes be utilized for the same purpose, dampers being provided to shut off the ventilation when it is necessary that the furnace fire shall be subject to the full draft of the chimney, to make it burn up briskly. These suggestions are all to the end of ventilation, which means to remove some air from the building and make room for fresh air. This is one of the features of the furnace system that has made it popular in all the vicissitudes through which it has passed, notwithstanding the many poor examples of work that are in existence.

CIRCULATION.

When ventilation pure and simple cannot be secured, circulation can be resorted to. In residences where there is a large body of air in proportion to the small number of people, there can be but little objection to circulation of the air in the building to facilitate the heating, provided arrangements are also made to take air from out

of doors at some time during the day. If the air is to be circulated there should be a register in the floor of the main hall having openings of the same area as the combined hot air outlets. There should be no difficulty whatever in heating a building having such a system, if the doors to the various rooms, or the transoms, are left open to facilitate the circulation.

To return to the consideration of the air bound room with its door closed, relief can be always secured by running a pipe from the floor of the room to the bottom of the furnace, and in case the regular outside air supply interferes with it, it is a simple matter to turn the mouth of this pipe upward on the inside of the furnace. If this pipe is made the same size as the hot air pipe to the room, greater satisfaction will be derived. The use of a return air duct can also frequently be made with advantage in rooms which have a large glass exposure, particularly when it is a bay window. The warm air in the room will naturally cool and fall along the glass in the bay window, and if a register is placed to gather this cooled air and carry it back to the furnace to be heated, it will go a long way toward aiding the heating of the room and avoiding a difference in the temperature in different parts of the room.

COMPRESSING AIR.

Experience has demonstrated that it takes considerable power to compress air to any considerable extent, but there is no such power exerted in the movement of air in furnace heating systems. It is remarkable that furnace systems are so generally satisfactory, when it is considered that the movement of the air depends entirely upon the difference in the weight of the air before and after it is heated. The upward movement of the hot air is due to the fact that the heavier, cooler air supplied to the furnace is continually sinking down and pressing the heated air upward. If furnace men would consider this fact more carefully they would use greater care in providing round elbows and taking off sharp corners of flues which retard the flow of air and add to the friction of its passage through the pipe and flues.

SOME HARD KNOTS IN FURNACE PRACTICE.

BY OLD ROSINHEAD.

With the express purpose of getting up a discussion through the columns of your valuable paper on the various difficulties encountered at times with hot air furnace heating and their remedies, I present the following remarks. Will some of the many men who are interested in furnace heating from various standpoints take part in the discussion and either controvert or verify, and also supply information on other knots that we have not encountered?

To start with, the furnaceman must ascend to the point of understanding that there are several fixed and unalterable natural laws governing the case, and, furthermore, to the realization that certain forces did exist, and were harnessed and in practical use in other branches of mechanics, probably long before hot air furnaces came into existence. Therefore we are inclined to believe that when a furnaceman meets with a difficulty in his work it will be necessary to drop all ideas about furnaces and reach out into the realms of other pursuits, where like causes produce like results. If he studies the subject deeply and long, he, no doubt, will be able to discover the remedies and be able to apply them successfully and without calling in the aid of other furnacemen, or looking for other furnace jobs to pattern after.

The cold air surrounding the earth is heated by refraction of the sun's rays on the surface of the earth, and in no wise do these rays have any great effect except by refraction. The tendency of this heated air is to rise, but this action is not so rapid or so intense but that spaces are found where shafts of cold air can penetrate through the body of hot air, and thus also be heated in their turn. The furnaceman who entertains doubts about the workings of a cold air supply, or a cold air return, need only revert to the fact that cold air is drawn down into the bowels of the earth 200 or 300 feet through a shaft by suspending, in a connecting shaft, an iron basket with a fire in it. By so doing miles of mine galleries have

been ventilated—a great big and long cold air return, surely. And this kind of a job was done long before furnaces came into vogue, if I am not mistaken.

Hot air, like lightning, flows where it meets with least resistance. When resistance is met with in its upward course it swerves to one side and flows till it is beyond the influence of such resistance, then it ascends again. Then what resistance does hot air meet with in a horizontal round pipe? Presumably, only its own friction in passing through the pipe, irrespective of the direction in which the pipe is run. The resistance is encountered at the register box where it enters the cold room, and nowhere else. Some registers are so located in some of the rooms of a big furnace job that the normal downward atmospheric pressure at that point is greater than the artificial upward pressure furnished from the furnace; hence no hot air can force its way up into the room. It is a warfare of one of the forces of nature against another force, and the weaker fails as a matter of course. Locate the register at a point in the room where these two forces cannot clash.

In some of these cases the hot air pipe is converted into a cold air return, and this is brought about by certain conditions existing at the hood of the furnace. Lots of old furnacemen will laugh when asked if they understand the principle of a jet pump or injector, and wherein the same principle is applied detrimentally to a hot air furnace. Yet the same principles do exert a controlling influence over parts of a hot air furnace. The rapid rush of a volume of hot air to the inlet to a very large pipe will, in some instances, create a vacuum at the inlet to a smaller adjoining pipe, and this vacuum moves up into the pipe, with the result that the downward pressure of the cold air in the room where the register is not in the right place will meet with no resistance, and the pipe will exert all its influence to pour into and mingle with the hot a body of cold air, and thereby deaden the heating effect in the other parts of the house.

Monarch Malleable Iron and Steel Ranges.

A very neatly printed catalogue of 24 pages, bound in paper covers, with side title in red and green, has been issued from the press by the Malleable Iron Range Company of Beaver Dam, Wis., recently located at St. Louis, Mo. Among the early pages are found directions with a description of the construction of the Monarch range. Illustrations are also presented showing general views of some of the varieties manufactured, as well as of special features to which attention is drawn in the descriptive text. The general make up of the catalogue indicates a thorough knowledge of the requirements of the trade, and the matter is presented in a way which cannot fail to attract the attention of the consumer as well as the dealer handling the various lines. In addition to the Monarch, reference is made to the Mound City range, and also to Terrell's tubular coal heater, which is represented with a part of the outer casing broken away, clearly indicating the internal construction. Terrell's hot blast heater and Terrell's tubular wood heater are also illustrated and described. The closing page in the catalogue is devoted to a few comments on drafts, flues and the operation of the ranges, as well as directions for setting up steel ranges.

ODD PLATES.

With the compliments of the Presbrey Stove Lining Company, Taunton, Mass., we have received one of the pretty wall calendars that they are distributing this season. The main feature of the card is a fine half-tone reproduction of Boughton's picture of the "Return of the Mayflower." The card is of blue, decorated with gold, the calendar sheets being attached to the lower part.

We have received, with the compliments of Fred W. Gardner, Western manager of the Michigan Stove Company, Chicago, a box containing a supply of lead pencils and a very neat sterling silver holder, which enables the pencils to be carried in the pocket without exposing the point. The holder is tipped with rubber, thus combining in the outfit everything needed by the user of

the pencil. The customers of the Michigan Stove Company who receive this holiday gift will find the pencils of excellent quality, and we have no doubt that they will be largely used in writing orders for Garland Stoves and Ranges.

THE MICHIGAN STOVE COMPANY have favored the trade with two artistic circulars lithographed in colors. One of these circulars, in addition to showing scenes from child life, is used for the purpose of illustrating and describing the Art Garland Junior, a base burner, intended for anthracite coal or crushed coke, made in three sizes. It is not only constructed to secure the best results as a heater, but it is also artistically designed and superbly decorated. The other circular treats of the Surprise-Garland steel cook, which is adapted to the use of either coal or wood. This stove is offered as one of the most durable steel cooking stoves ever brought out. It is provided with an aerated oven, and is finished with an attractively designed cast base and with the doors trimmed with finely carved cast work.

JOHN W. HOLMES, for the past 20 years chief foundry foreman of the Michigan Stove Company of Detroit, has resigned his position, to take effect in the near future.

THE IRELAND & MATTHEWS COMPANY, manufacturers of Stove Trimmings and Brass Goods, Detroit, Mich., are arranging for the construction of a fourth story over their present factory building, which is about 150 x 160 feet in size. The addition of this story will give the company a total of 24,000 feet of floor space. They recently occupied a two-story brick building erected to be used as a brass foundry. A new power plant will shortly be added, in which will be placed a 300 horse-power cross compound engine and a large Wickes vertical tubular boiler. They will further install a 300 horse-power electric generator in the power plant.

THE KEYSTONE STOVE FOUNDRY of Spring City, Pa., were granted a charter at Harrisburg on December 18 with a capital of \$60,000. This incorporation, we understand, is the outgrowth of the former Spring Valley Stove Company, and the new concern will commence active operations shortly after January 1 with a force of about 60 hands. The officers of the concern are: President, E. B. Colby of New York city; general manager, J. Edgar Diemer of Spring City, Pa., and treasurer, Irwin Cairns of Park place, N. J.

THE AMERICAN STOVE COMPANY is the name of a concern who filed papers of incorporation in the State of New Jersey on December 19, the capital stock being placed at \$125,000. The incorporators are: Clifford W. Perkins, A. S. Meeker and K. K. McLaren. It is intimated, although the rumor lacks confirmation, that the company are to form the nucleus of a combination of Stove manufacturers, and that the capital is to be increased to several million dollars.

THE ABRAM COX STOVE COMPANY of Philadelphia, Pa., were incorporated at Harrisburg on Thursday, December 19, the capital stock being placed at \$150,000. The charter of the company had expired, hence the taking out of a new one. The incorporation, however, in no way affects the character of the company.

THE Quick Meal Steel Ranges, Oil, Gas and Gasoline Stoves, with the familiar trade-mark of the Ringen Stove Company, St. Louis, Mo., appear on the top of a calendar for 1902, with which we have been favored by the manufacturers. The calendar is arranged in weekly sheets with blank spaces against each for notes. It is mounted on a metal back, and arranged either for hanging on a wall, or standing upon a table, having an easel attachment which can be used for the latter purpose. The calendar will no doubt be found useful, and be greatly appreciated by those who receive it.

THE SOMERSET STOVE FOUNDRY COMPANY of Somerset, Mass., manufacturers of the Glendale and Somerset Stoves and Ranges, have favored us with a copy of a pretty wall calendar for 1902, which they are distributing to their friends in the trade. The leading feature of the calendar is a very artistic reproduction of a painting of poppies and wild flowers, the calendar sheets being attached to the bottom of the card. On account of the decorative feature the calendar is sure to be given a place of honor in the Stove dealer's office.

THE business of Moore Brothers, at Wichita, Kan., has increased to such an extent that they have found it necessary to erect an addition to their foundry and warehouses, which will double their capacity. It is expected that the warehouse will be 50 x 150 feet in size, and two stories in height. The warehouse will be used for the storage of Stoves and also for the stock of heavy irons, such as Eye Beams and other structural material, which they will carry in the future. The concern also contemplates the erection of a new furnace, which will enable them to melt about 10 tons of iron a day, instead of 4 or 5, as is now the case.

AN ornamental panel of irregular outline and printed in colors is the basis of a calendar for the new year, which is being distributed with the compliments of the Danville Stove & Mfg. Company of Danville, Pa. The picture with which the panel is embellished represents an interior with two little girls sitting at a window, while one holds in her lap an open book. The text consists of the addresses of the branches of the company in Philadelphia, New York, Pittsburgh and Chicago. Attached to the lower part of the panel, which is provided with a metal eye for hanging up, are 12 leaflets with the days of the week and month appearing in white letters upon a solid black ground. Included in the astronomical information are the different phases of the moon. A thirteenth leaflet is devoted to a calendar for the year. In this case the days of the week and month appear in black letters upon a white ground.

SHORTLY before midnight on December 18 fire was discovered in a six-story building on West Fayette street, Baltimore, Md., occupied by several business firms. Among the sufferers were Isaac A. Sheppard & Co., the well-known Stove manufacturers.

Vanderman's Hood Coupling.

Where waste and vent pipes pass through cement and marble floors and through roofs, the necessity for a tight joint which will also allow free expansion of the pipe has been one of the difficulties which the plumber

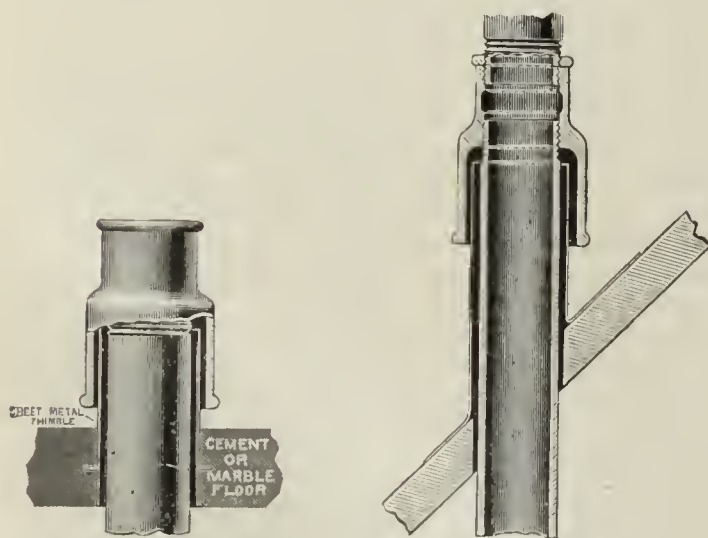


Fig. 1.—Floor Connection.

Fig. 2.—Roof Connection.

Vanderman's Hood Coupling.

has had to deal with. The Vanderman Plumbing & Heating Company of Willimantic, Conn., are placing on the market a hood coupling, which is designed to be used in connection with a thimble imbedded in the cement or marble floor, as shown in Fig. 1. A sectional view is presented in Fig. 2, showing its use where pipes must pass through the roof. This coupling is designed for use in connection with wrought iron pipe of all sizes, from $\frac{3}{4}$ inch to 12 inch. The coupling is threaded both top and bottom. At the bottom it is enlarged to slip over the pipe as a sleeve and cover the metal thimble which projects up into it. It is pointed out that by this means a perfectly watertight connection can be made wherever the coupling is used.

A Christmas Carol?

The poet of the Canfield Supply Company, Kingston, N. Y., has evidently been inspired again, for in the company's large show window, which is decorated with handsome tea and coffee pots, stands a big card with the following verses printed on it:

Santa Claus with Christmas joys
Brings other things than simple toys;
Gifts to fill the heart with cheer
And keep you happy all the year.

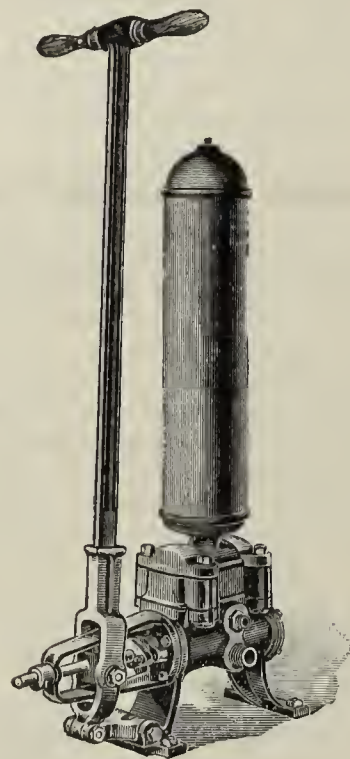
Could you peep into the sack,
Hanging so full upon his back,
You'd see among the bundles queer
Many that came right out of here.

Tea pots nickeled up so fine
And coffee pots that brightly shine.
Kettles, too, perchance you'd see,
To hang on some one's Christmas tree.

Get in line, step right inside;
Fill some one's heart with honest pride.
Christmas morn when you awake
You'll see that you made no mistake.

Goulds' Sentinel, Jr., Double Acting Spray Pump.

The Goulds Mfg. Company, Seneca Falls, N. Y., are offering the double acting spray pump illustrated here—



Goulds' Sentinel, Jr., Double Acting Spray Pump.

with. It is designed especially for the requirements of orchardists and orange growers desiring quick work at high pressure. Notwithstanding the large capacity of the pump, it is remarked, one man can operate it constantly against over 100 pounds pressure without undue effort. It is explained that the pump is often used with six nozzles on the end of one extension pipe; also with several leads of hose. It is pointed out that the piston is easily and quickly repacked; that all valves are easily accessible; that the piston, piston rod, valves, valve seats and cylinder lining are brass; that the piston rod is outside guided, so that it runs perfectly straight, and that the air chamber is 5 x 30 inches in size. The pump when ordered without hose has 1-inch suction and two $\frac{1}{2}$ -inch discharge brass hose couplings, also brass strainer. Brass Y's for fitting two leads of discharge hose on a side are furnished when ordered. Hose can be furnished in any length and any number of leads, double nozzles, extensions, &c.

HAVANA HARBOR.

A window display that attracted much attention and kept a crowd of interested spectators in front of the Hardware store of C. Magnussen, Lyons, Iowa, both during the daytime and evening, is shown in Fig. 1. The

water and the grooved pulley connected with a small steam engine of 1-40 horse-power, that caused the boats to revolve slowly. The side walls of the window were used to display Guns and Fishing Tackle. Fig. 3 shows the write-up given the display in the local paper. These notices can generally be secured if the dealer advertises

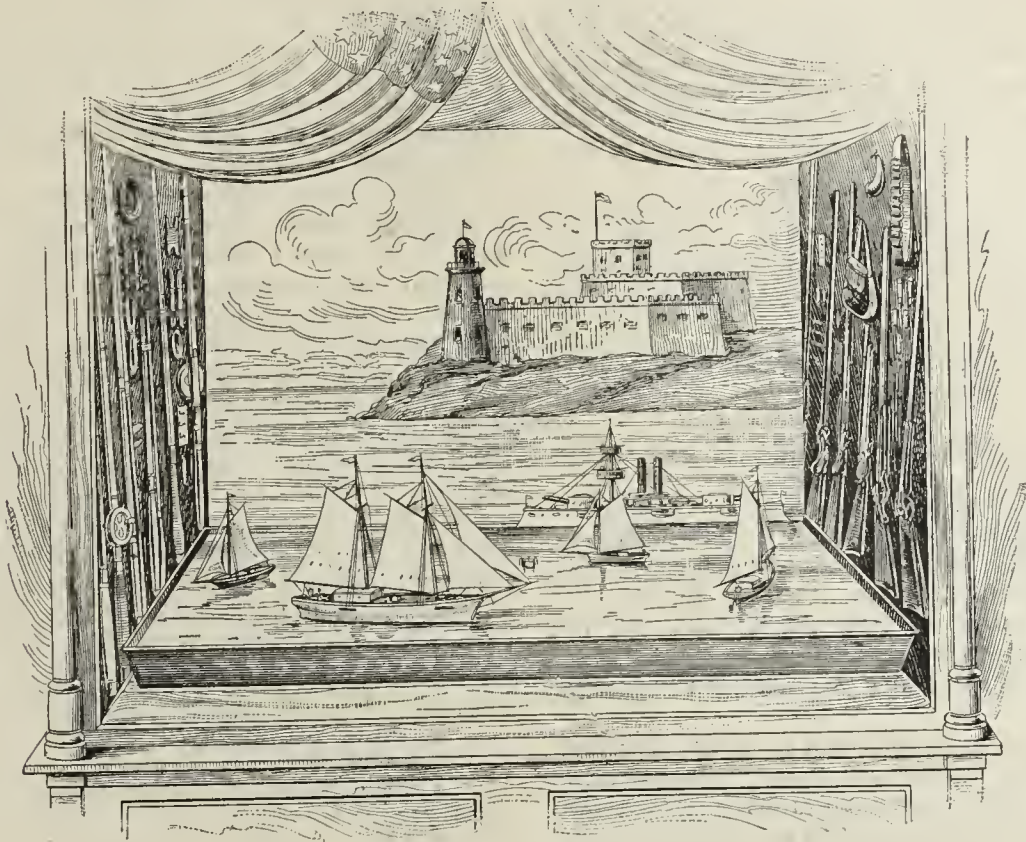


Fig. 1.—Havana Harbor.

background was formed of a painted picture of Morro Castle, in front of which was placed a model of the ill fated battle ship "Maine." In the bottom of the window was set a pan 6 feet square and 5 inches deep. In

and makes a request for them when he has something of particular interest in his window.

The Tennessee Hand Grinding Mill.

A. H. Patch, Clarksville, Tenn., is offering the hand grinding mill shown herewith. All bearings are chilled and the crank is of malleable iron. The grinding plates are made, it is remarked, of the hardest and strongest

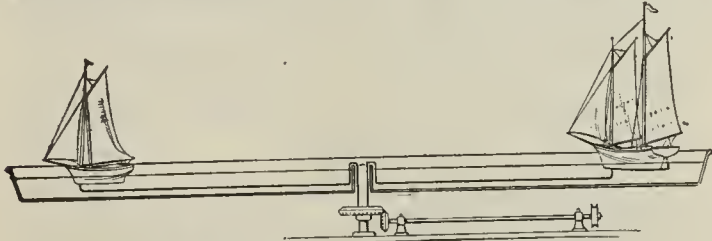


Fig. 2.—Mechanism by Which Ships are Moved.

the center of this pan was soldered a 1/2-inch pipe, a hole being left in the bottom of the pan. Through this pipe was run a small shaft, to which were fastened wire



Fig. 1.—The Tennessee Hand Grinding Mill, Front View.

metals. The mill is designed for farm or family use, and is readily taken apart for cleaning or oiling, without the use of tools. New grinding plates can be inserted at

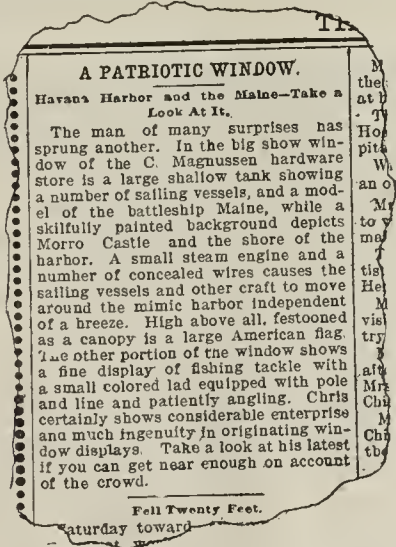


Fig. 3.—Clipping from Local Paper.

arms, the sail boats being attached as shown in Fig. 2. To the lower end of the vertical shaft was fastened a beveled gear, taken from an egg beater, which worked in another beveled gear on a horizontal shaft. On this shaft was a grooved pulley. The pan was filled with

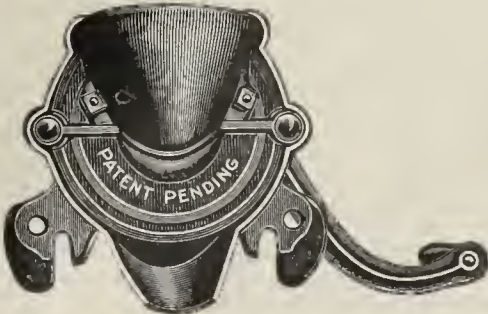


Fig. 2.—The Tennessee Hand Grinding Mill, Rear View.

a small expense, it is remarked, whenever the original ones are worn out. The mill is adjustable for fine or coarse grinding of wheat, corn, rye or other dry grain. The mill weighs 12 pounds complete.

SUGGESTIONS FOR INVENTORY.

The following suggestions, which apply to taking account of stock, illustrate the methods adopted by an enterprising hardware house. The suggestions, in typewritten form, were distributed to the employees for their guidance in taking last year's inventory:

1. Sheets which we will use are the ordinary blanks which Mr. ——— uses for writing up orders. It is entirely proper to write on both sides, and better, from the fact that the bulk of books when bound finally will be smaller. Please be careful that the two holes on the left hand side of the pages are not torn, as the sheets will be bound using these holes.

2. We want you to think as you read and see where these suggestions in regard to inventory are good, and as you work, in either stock or writing down, have matters clear whether they are touched upon in these suggestions or not.

3. Do not write upon the two top lines of any sheet.

4. Do not write upon the two bottom lines of any sheet.

5. At the head of each sheet indicate the part of the store covered by it.

6. Be sure that the space of one line is left between items of different kinds. This applies to different items of the same kind of goods. For instance, there should be a line left between Flat Head Bright Screws and Flat Head Brass Screws or other goods. Also, for instance, No. 7 Hand Saws and D 8 Hand Saws would take a different discount and a line should be left between them.

7. We wish you to be careful that all goods of a certain kind are written under each other. For instance, if No. 11 Chest Handles were in one row of shelves and No. 12 in another the goods should be rearranged so that all Chest Handles will be together, and the inventory of Chest Handles will all be in immediate sequence. This is very important for the proper arrangement of inventory and we will ask you to be careful about it.

8. The only exception to the above is in Builders' Hardware. Mr. ——— has an especial arrangement for this line of goods and inventory should be taken with this arrangement in mind. This, however, Mr. ——— will attend to.

9. Each evening we wish those working on inventory to stop at 5 o'clock and have all of the sheets which they have taken during the day priced, extended and added. The addition which you make must come immediately under the columns in which you make the extension. We do not wish you to use the last three columns which are on the sheets for figures.

10. We will furnish each of you a separate want book, which you will find divided as follows:

a. Wants.—Under this head make a notation of all short items for which orders should be placed. At the end of each evening transfer from this want book such items only as should be ordered immediately, in such case marking out or checking off the item added on the general want book.

b. Goods Which Should Have Sample Boards Made for Them or Some Better Display Devised.—Under this division simply make a memorandum of goods and after inventory is completed, at our convenience, we will properly provide some display.

c. Goods Which Are Bad Stock, or Odds and Ends.—As in above case, simply make a notation of this, and we can afterward go over them.

d. Goods Which Should be Marked, or Additional Lists Made, or Prices Corrected.—Under this head you will simply make a notation of where you think prices should be corrected, or a notation where goods are not marked and should be marked, or where other lists besides the one in the price book at the front of the store should be put near the stock. For instance, the writer is working now on a list of Hames, which we have not had and which should have been made. This is the kind of thing that you want to note under this column.

The suggestions that are gotten up in this book we do not wish brought up until after the inventory is complete, unless there is some very important matter which should claim our immediate attention. It is simply an arrangement for afterward getting our stock and facilities for prompt and accurate sales in better condition.

11. We wish you to leave all stock in absolutely clean condition, taking out the goods from where they are stored and sprinkling and sweeping underneath. Let us have a nice clean store, as far as the corners and out of the way places are concerned, after our inventory is completed.

12. All shelves and bins should have all of the goods taken out and be brushed out. It is a very good plan to have with you a box of damp sawdust for sprinkling in shelf. Then dust the same out or wipe it with a damp cloth. This will diminish materially the dust floating around the store and will add a good deal to your comfort in cleaning.

13. Where two or more boxes have been opened one of the boxes should be filled. For instance, if one of the boxes of No. 1036 Padiocks has seven in it and another one eight, make one of the boxes a full dozen, leaving one box with the remaining three locks in it. Do not carry this matter too far and throw away boxes which might be used. It is not a bad plan to have an empty box, with the proper number on it, convenient for use where orders call for less than a package.

14. We wish you would be careful in going over the stock to see where you think it advisable to oil certain goods. For instance, see that Cross Cut Saws, Circular Saws and other things which you know will be liable to suffer from rust receive a slight coating of oil.

15. There will be a different man each day whom we do not expect to take any part in the inventory work unless it be the matter of some verbal information to some one. We will arrange this as follows:

a. From Wednesday, December 26 to Saturday, January 5, Mr. ———.

b. From Monday, January 7, to Saturday, January 12, Mr. ———.

c. From Monday, January 14, to Saturday, January 19, Mr. ———.

d. From Monday, January 21, to Saturday, January 26, Mr. ———.

16. On the morning of December 31 we wish the following stocks taken, regardless of your attention to other matters of inventory—that is, we want you to arrange among yourselves to take these items, leaving off your work in other items:

a. Nails, both kegs down stairs and broken lots in bins.

b. Horseshoes, both full kegs down stairs and broken lots in bins up stairs.

c. Bar Iron.

d. Loaded Shells, Cartridges, both full cases and broken lines in shelves.

e. Shot, both in case in front and bags in rear.

f. Powder, both in canteens in front and Powder in magazine at side of store.

Mr. ——— will on this date take the stock of Machine Needles, and in doing so will please estimate the ones in bins.

17. The following is as important as anything, and we wish each of you to get it into your records very distinctly.

a. Up to night of December 31 enter all goods which you sell which have been taken.

b. On the morning of January 1 and after enter all goods which you sell which have not been taken.

After the stock of any items is taken write a tag so stating and attach to the goods.

We wish each man writing up sheets to keep a consecutive number on all sheets written. For instance, Mr. A. would head his sheets "A" 1, 2, 3, 4, &c.; Mr. B. would head his sheets "B" 1, 2, 3, 4, &c.

At the end of the book of record of sales we will indicate quite a number of pages "List of goods which have been taken." Under this head, at the end of each night indicate the goods which have been taken. For instance, if Mr. ——— had the day before or the night before taken an inventory for Hames, simply write Hames down in this list. When it is necessary to make exception to such list they should properly note and then afterward erase. For instance, if Mr. ——— has taken all of the Hames except those in some particular location or some particular kind, he would indicate Hames except ———. When this inventory was complete he would simply erase the exception which he had made.

HARDWARE STORE WINDOW DISPLAY.

BY JAMES COOK SARCHET.

Window displays in most hardware stores in the smaller towns and cities are not changed often enough, and the goods shown frequently get soiled with fly specks and dust. The mistake in arranging show windows is in not placing the goods so as to attract attention. Goods displayed should be in season and up to date, and arranged so as to call to mind the needs of the hour, thus helping to increase sales. These will more than pay for the time it will take to fix up the windows. People in passing will see, and often purchase at once, what they will not need for weeks to come if the article is called to mind by a nice display.

HELPS TO ATTRACTIVE DISPLAYS.

Good shelving and fixtures help to show small goods. Swinging glass shelves make a good display rack, and do not cast as much shadow as wooden shelves. Mechanical appliances, such as water and electric motors, may at times be advantageously used for running mechanical toys, bicycles or some other form of moving display.

The light in the windows should be the best to be had. Electric lights make the best effects.

Backgrounds for windows should be bright and clean, and changed as often as the window is trimmed. A very good background is made by taking a frame work of wood built to fit the back of the window. Cover this with colored muslin or fancy colored paper on both sides, each side being of a different color, one side perhaps blue and the other red. These can be turned around very easily, and a change thus made in the color of the background.

VARIETY IN DISPLAY.

A variety in display is best. The more goods displayed the better, as a large show of goods will call attention to the large stock kept by the firm. Goods out of season should never be displayed. Goods in season or about to be should have the first place in all display windows. The window should be changed often and not left to become an eyesore to the public. It should be taken careful care of and dusted every morning. All bright goods should be rubbed to keep them from getting rusty.

MARKING PRICES.

Prices should not be put on all goods, as the competitor will be about the first one to learn them, and he will go one better. If it is necessary to mark prices on goods have them so low that there will be no danger from the other fellow.

Keep the window so that the public will talk about it. Always have something that is new and up to date to show and it cannot fail but win trade.

Stove and Hardware Dealers.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, have decided to increase their capital stock from \$500,000, its present amount, to \$1,000,000. The increase is to meet the expense of extensions and improvements which they are to make in building new warehouses, to which reference has recently been made in these columns.

THE ELLIOTT MFG. COMPANY, Warren, Ill., are distributing an illustrated catalogue of the Elliott one-piece bottom Anti-Rusting Tinware—Pails, Dippers, Tea Kettles, Wash Boilers, Tea Pots, Coffee Pots and Boilers, Measures, Sprinklers, Wash Basins, Milk Pans, Sauce Pans, Preserving Kettles, Oil Cans, &c.

THE HOOD MFG. COMPANY, Carthage, Mo., manufacturers of Self Measuring Faucets, have bought a new building on Main street, into which they will move their manufacturing department. New machinery will be installed and the capacity considerably increased.

AUGUSTUS J. CORDIER, vice-president and general manager of the Lalanc & Grosjean Mfg. Company, New York, returned home in time for Christmas from a business trip to Chicago and St. Louis.

THE BOSS WASHING MACHINE COMPANY, Cincinnati, Ohio, who claim to be the manufacturers of the leading and best Clothes Washers, are sending out a calendar which will doubtless be popular with all who receive it. It is handsomely printed in colors, and the main feature of the card, which is 14 x 20 inches in size, is two representatives of Young America. The young man, in an officer's uniform, is holding an American flag, while his partner, a young girl in a pink dress, has a drum, and is said to be "drumming for the Boss Washing Machines."

H. MERKEL, 509-511 Elm street, St. Louis, Mo., manufacturer of the Simplicity Gasoline Lamps and Appliances, has issued circulars and price-lists of his well known line of goods. The assortment of styles covers a wider range than heretofore. We are informed that the demand for these goods is on the increase, and that orders have been filled to points in Japan, China, Philippine Islands, Cuba, Europe, South America, Central America and Canada. Mr. Merkel has entered largely into the manufacture of Mantles for lights, and is prepared to fill all requirements for this specialty.

THE Broiler patents owned by E. A. Leland, Great Barrington, Mass., have lately been purchased by Frank H. Wright and others, the intention being to arrange as soon as practicable for the manufacture of the Broiler Dies for stamping are now in course of preparation and will be about all the new equipment needed. The Broilers will be made of Sheet Iron.

THE WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis., are sending out a new catalogue of the Wisconsin Peerless and Badger Refrigerators. These Refrigerators are made with a cleanable flue wall. This consists of a square hollow device attached to the center and inner side of the wall, forming a flue within a flue, thus aiding in the rapidity of the circulation. These side flues can be removed to be cleansed as desired. Specially designed fittings are used, such as a special form of ice rack and an efficient drain pipe and drip cup. The Peerless line occupies 52 pages of the catalogue, and is shown in a full variety of styles covering all constructions, including Sideboards for domestic use and large sizes for grocers and butchers. The last ten pages of the catalogue illustrate the Badger line, which is a well finished style of Refrigerators offered at a somewhat lower price.

A. M. BANNARD has sold his Hardware, Stove, Farm Machinery, Wagon, Buggy and furniture business, at Brownsville, Ore., to J. W. Ross, who will continue at the old stand. Mr. Bannard has acquired the furniture business of M. Wilbur, Grant's Pass., Ore., and expects later to enlarge it and add the sale of Stoves and General House Furnishings.

THE HENRY & WRIGHT MFG. COMPANY, composed of R. G. Henry, formerly superintendent, and D. M. Wright, formerly secretary and treasurer, of the American Specialty Mfg. Company, have succeeded the latter concern, and will continue business at 132 Sheldon street, Hartford, Conn., manufacturing Sheet Metal Blanks and Dies and Tools for same, light machinery and novelties under contract. They already manufacture a line of Hardware Specialties, including the Columbia and Twentieth Century Tack Pullers, and are preparing to bring out a line of Pruning Shears consisting of about 12 different styles.

HIBBARD, SPENCER, BARTLETT & Co., who are now erecting a large warehouse on the north side of the Chicago River, at Chicago, have in view even more extensive improvements. They have purchased the entire block extending along South Water street from Wabash avenue to State street, and lying along the Chicago River in the rear, on which they propose to erect a large store building which will eventually take the place of their present building at Lake street and Wabash avenue. The new property is located about one block northwest of their present store building. The block which has been purchased is now occupied by a number of business structures which are under lease until May 1, so that the beginning of the new building will necessarily be deferred until after that date. The location which has been chosen is advantageous in many respects, the navigation facilities being considered extremely desirable.

A CHALLENGE OF SCIENTIFIC AXIOMS.

BY J. C. BAYLES, M.E., PH.D.

A few days ago I fell in with a little book which gave me more entertainment in an hour than I usually manage to extract from reading in a month. It is not a humorous book, at least the author did not intend that it should be so regarded. He is in deadly earnest throughout, and with the implacable zeal of the iconoclast he attacks certain "Errors in Science Teaching." This, by the way, is the title of the little book in question, and the author is Prof. C. Stuart Gager of the State Normal College, Albany, N. Y.

Professor Gager's quarrel is not with the facts which are reasonably well established from observed phenomena, but with certain slipshod forms of expression embodied in most technical literature and all technical teaching, and which, failing to state the truth accurately, are supposed to be conducive to disjointed and inconclusive thinking. The first of the fallacies which the author attacks is that concealed in the familiar proposition,

HOT AIR TENDS TO RISE.

Professor Gager shows very clearly that it has no such tendency. This will make a good many readers of *The Metal Worker* "sit up" and rub their eyes. The trouble with this form of words, which is one of the heritages of the present from the past, is not with the phenomenon that hot air does rise when free to move, but that it has a "tendency" to do so. To speak by the card, it has no such tendency, any more than has a hot flat iron or a hot tamale. Hot air, as well as cold, is constantly acted on by gravity, and gravity imparts to it a tendency to move toward the center of the earth. Heating air does not correct this tendency or create a tendency to set gravity at defiance. What happens to cause air to circulate by the rising of that which is relatively warm and the falling of that which is relatively cold is described by Professor Gager as follows:

Suppose that the air of a room is at a given temperature. It is, then, other things being equal, of equal density throughout; but if a given cubic foot is heated it expands and occupies more than a cubic foot of space. Its weight remains the same, but the weight of the air it displaces after it is heated is greater than that of the air it displaced before it was heated; hence the buoyant force is greater than the weight of the heated air, which, in consequence, rises.

If one was disposed to be hypercritical he might ask why, as air is a measurably homogeneous gas, 1 cubic foot which chances to have acquired heat should retain its identity and displace another cubic foot of air which happens to have remained cold? To press this question might be "to inquire too curiously." The author says:

Hot air, then, is not lighter than cold air. If, however, 1 cubic foot of (any old) air is heated and in expansion made to fill 2 cubic feet, each resultant cubic foot weighs only one-half the weight of the original cubic foot, because it contains only one-half as much air. The same amount of air, however, now occupying 2 cubic feet, weighs as much as it did before it was heated.

This is indisputably true, and would be interesting and significant if 1 cubic foot of air was different from another foot of air, and had a distinct and inextinguishable identity. But it hasn't. It leads us irresistibly to the conclusion that a cubic foot of warm air weighs (or may weigh, if hot enough) only half as much as a cubic foot of cold air. That it is acted on by gravity, and that in consequence of such action it tends downward instead of upward, is true enough, but so for that matter does a cork in water. The reason the immersed cork floats, while the cork in air lies quiescent as near the center of the earth as it can get, is because it is lighter than the water it displaces in the one instance, and heavier than the air it displaces in the other instance. Light and heavy are relative terms.

In splitting hairs as to the meaning of words, Professor Gager appears to have lost sight of the fact that too much refinement of one's technical vocabulary is apt to result in a confusion of ideas. As an abstract scientific proposition it is not true that hot air tends to rise.

It is true, however, that in a body of air of unequal temperature the parts which are warmer, being lighter, volume for volume, than the parts which are cooler, do rise, not by virtue of what the old physicists called "specific levity," but because gravity, acting more powerfully on the denser air, draws it down and deposits it in strata under the warm air, which is thus uplifted and made to assume a relatively higher position.

Consequently, to say that warm air, which does rise relatively to colder air, which is more powerfully acted on by gravity, because more dense, has a "tendency to rise," is to state the fact correctly—within the usual limits of colloquial accuracy. Relatively in cold air, hot air rises. It does so in obedience to a natural law, which compels it to do so. What matter is compelled to do in obedience to natural law it tends to do. What matter tends to do habitually may, without a very violent stretch of the imagination, be said to represent its tendency. The phrase may not reflect all the shades of meaning which present themselves to the mind of one who is both a physicist and a purist; but it is a long way from admitting of proper classification among the "errors of science teaching." I am accordingly compelled to conclude that Professor Gager, in this instance, has found against the familiar phrase, "Hot air tends to rise," an indictment which will not stand, and which must be dismissed with costs—said costs having been incurred in the publication of his entertaining little book.

Another familiar formula which Professor Gager seeks to discredit by showing that it is fallacious and misleading is that

HEAT EXPANDS AND COLD CONTRACTS.

The several pages of his unique book devoted to demolishing this familiar axiom are full of interest, but they lead to the conclusion that it would be perfectly satisfactory if recast as follows: With two known exceptions, masses of matter when heated increase in bulk for the reason that the molecular movement, becoming more energetic with each degree of absorbed heat, demands that the molecules have more room in which to oscillate. Hence the dimensions of such mass of heated matter become greater, and we observe the phenomenon popularly known as expansion. If, however, the temperature of the mass is lowered the attraction of cohesion tends to re-establish the molecular relation temporarily disturbed, and we observe the phenomenon of contraction erroneously attributed to cold, since the body shrinks.

This would be very good phrasing for the class room or the lecture platform; but life is short, and let us see whether any essential error is embodied in the familiar formula, "Heat expands and cold contracts." Let us suppose that 60 degrees F. is our datum line. It is probably as near to average normal temperature as we can get. Indoors we have a stove, out of doors the thermometer records zero. The object of our experiment is a rod of iron. If we take this to the stove and leave it where it will become hot we may, if we know how and our instruments are delicate enough, establish the fact that with each degree of heat taken up by the iron above 60 degrees F. the rod expands sufficiently to add 0.00006 to its length. If, on the other hand, we take the rod at 60 degrees F. and lay it on the window sill, we may, by the same methods, observe that it contracts sufficiently to shorten it as much for each degree of heat lost as it lengthened with each degree of heat added.

Half the proposition is certainly true; the other half is in error only in the assumption that cold is a force, the antithesis of heat, whereas it is simply a phenomenon resulting from the absence of heat. Strictly speaking, cold does not contract—it is the attraction of cohesion which does that; but the student might very well reason as follows: "Cold is a term employed to indicate the absence of sensible heat; ergo, the absence of heat is cold. Matter expands by reason of the presence of heat; in the absence of heat it contracts again. Hence heat expands and the absence of heat permits contraction. To save time I will express this phenomena in the simplest and most intelligible language I can employ—viz., heat expands and cold contracts. If the Professor

should quarrel with my terminology, I will tell him that I know perfectly well that cold is not a force and don't contract things, but that I really believe I can employ my time to better advantage in learning phenomena than in lying awake nights wondering how to describe them in words of such precision that a hypercritical old pedagogue cannot find opportunity to correct them. When I become a teacher it will be time enough to subject every word employed to a qualitative and quantitative analysis."

Still another popular scientific error upon which Professor Gager jumps—I was about to say with all four feet, but, as he probably has only two feet, I might thereby lay myself open to correction—is the statement that

WATER SEEKS ITS OWN LEVEL.

This sentiment, Professor Gager insists, has no meaning, since water does not seek anything. Technically, this is correct. The habit of indulging in or prosecuting searches is not one of the attributes of water. It flows, percolates, permeates, evaporates and does an infinite variety of things, but it does not search. Perhaps this is due to the fact that it does not know just what it wants, and consequently cannot look for it. Professor Gager's thesis is that water has no "level" of "its own," which it continuously seeks. It is not difficult to establish this thesis. If one makes a man of straw he may buffet him, abuse him and end up by kicking the stuffing out of him, and be quite sure he will meet no formidable resistance and suffer no reprisals. A translation of the objectionable formula that water seeks its level would be that water in vessels between which communication exists will, if unrestricted by adverse and disturbing influences, ultimately stand at a common level in both. In this form it is unobjectionable. Professor Gager interposes the objection, however, that if a number of stand pipes are erected perpendicular to the horizontal outflow pipe of a reservoir in which water stands at the level of, say, x , the water will not rise in these stand pipes to the level x , but that the levels it will attain in the stand pipes will correspond to a line drawn from x , the level of water in the reservoir, to o , the orifice of the discharge pipe—presuming, of course, that the orifice is open.

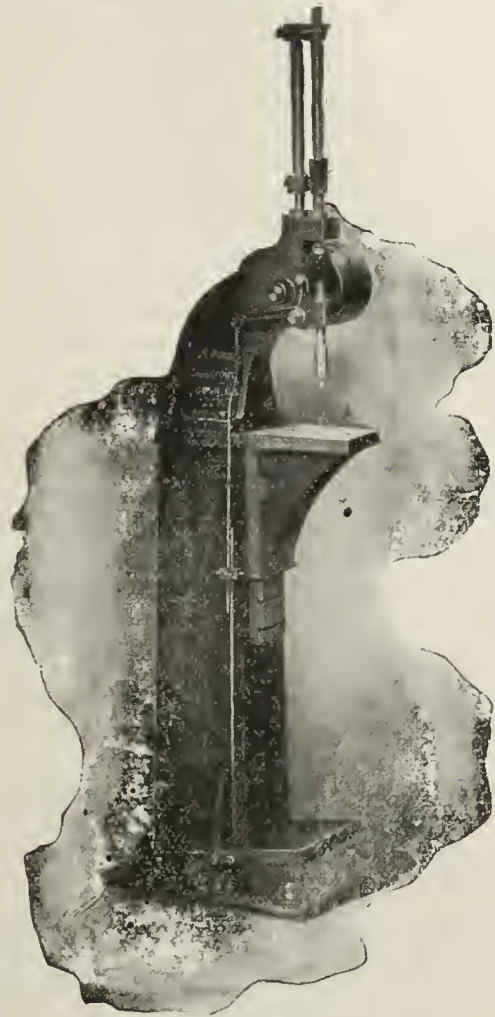
I presume this is so, but inasmuch as the water is diverted from its natural tendency by reason of the fact that what it might like to do is incompatible with what it must do under the circumstances described, it is not exactly clear to me that the phenomenon described establishes the fact that the "tendency" to rise in the stand pipes to the level of the reservoir does not exist. I have frequently found my own tendency thwarted by adverse circumstances, and have been unable to do what I wanted to do by reason of the fact that I could not do it. This may be the case with the water. If the orifice of the discharge pipe is closed the rapidity with which the water will rise in the stand pipes to the x level of the water in the reservoir will be found extremely suggestive of a previously restrained tendency on the part of water to do this very thing.

To say that "water seeks its own level" is a loose way of expressing a perfectly well understood phenomenon, but it is about as brief and convenient a form of words as could well be found. It implies that part of a body of water has been temporarily elevated or depressed above or below the level of the rest of the same body, and that, if free to move, it will return to its place as part of such larger body and the common level of the surface of such body will be as promptly as possible restored. This statement of the matter is indisputably true. It is also true, as exemplified in the hydrostatic paradox, which bothered the early philosophers from Archimedes down, that if two bodies of water, one as large as the Atlantic and the other inclosed in the bore of a pipe stem, are connected, the water will stand in one exactly as high as in the other.

The more we study Professor Gager's little book the more we wonder why he wrote it. However, if others have as much pleasure from it as I have had, it will not have been written in vain.

The Hubbell Riveting Machine.

The new riveting machine manufactured by Harvey Hubbell of Bridgeport, Conn., will take work up to 3-16 inch. The foot lever is connected with a bell crank, which operates a hardened steel bolt, pushing it under the hammer spindle at the top of the stroke, stopping the machine instantly. The hammer is caused to rotate by a ratchet device that operates on the up stroke. The spindle strikes about 900 strokes per minute. The blow is adjusted by changing the tension spring on the hammer spindle. The table is adjustable by being clamped on a gibbed way, and is rigidly held in place by a piece of metal inserted in horizontal grooves planed in the



The Hubbell Riveting Machine.

pedestal, and has no chance to jar down. The weight of the machine with countershaft is about 300 pounds, the height being 60 inches and the floor space 20 x 12 inches.

Adulterated Linseed Oil.

The adulteration of linseed oil is becoming a common practice among small dealers, both in New York and other cities, in spite of many arrests and fines, says the *New York Commercial*. The State Department of Agriculture has a bureau for the inspection of oils in Albany and its agents are frequently sent to New York to inspect the oil shops. Frequently spurious oil is found, and a fine of \$100, the State penalty, is paid.

The Government inspector takes two samples of the oil. One he seals and leaves with the dealer and the other he takes with him for analysis. In case of a dispute or if the matter is carried into court, the first sample is turned over to a chemist for his opinion. The spurious oil is sold as pure stock, and frequently the barrels of prominent crushers have been used.

It is reported that a suit for damages will soon be filed against a jobber by a well-known oil manufacturer.

There are only six States where stringent laws against the adulteration of linseed oil exist. They are New York, Pennsylvania, Michigan, Ohio, New Jersey and Illinois. The recent high price of linseed oil was a great temptation to unscrupulous dealers to increase their supply of linseed oil, by mixing with it neutral oils. These facts became known on account of these firms underselling the crushers and the many complaints entered by consumers.

Among the oils used for adulteration are corn, cottonseed, petroleum and other mineral oils.

The Cooling and Warming of Closed Air Spaces.*

BY PROF. DR. RECKNAGEL OF AUGSBURG, GERMANY.
Translated from the German by Charles F. Hauss.

In his well-known work on heating, "Leitfaden zum Berechnen und Entwerfen von Lüftungs und Heizungsanlagen," page 111, Professor Rietschel says: "In general practice it is during the period of continuous heating only that the absorption of heat (by the walls) is considered as being worthy of thought. In the absence of a good rule we must depend on results as a guide." I would be pleased to help overcome this lack of theory. Literature has thus far brought nothing of service. The problem given in 1822 by Fourier in his celebrated "Theorie Analytique de la Chaleur" was not solved by him nor has it been solved by any one since. Yet Fourier's works offer a good basis for figuring.

The nature of the problem leads, first of all, to studying the process of cooling. I will not weary you with the complicated formula and equations necessary for solving this problem, but will eventually prepare tables, with the help of several young mathematicians, that will illustrate what can be done with this new theory.

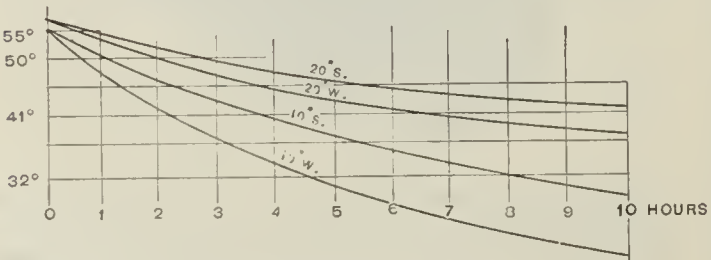
RESULTS.

What interests us most are results, and

- 1. The temperature of the inside air = J.
- 2. The temperature of the wall inside = Ti.
- 3. The temperature of the wall outside = Ta.

The following results were obtained by assuming a room 16 x 16 x 13 feet, with a single exposed wall 16 x 13 feet = 208 square feet, exposed to free air of - 4 degrees F., and the temperature of the inside air of + 68 degrees F. at the start, and that after shutting off the source of heat the room was left to cool. The exposed wall is of brick with a specific weight = 1.8, calorific capacity = 0.2 and conductivity = 0.7.

Two thicknesses of wall were considered, the one 10 inches, the other 20 inches thick, and each was used once in still weather, and once in windy weather, and in



The Cooling and Warming of Closed Air Spaces.—Fig. 1.—Curves Showing the Process of Cooling Indicated in Tables I and II.

the latter case the velocity of the wind was 16 to 20 feet per second. In each case the result is shown in one, two and ten hours of continuous cooling:

I.—With 10-Inch Wall.								
Time.	Inside air, J.		Inside of wall, Ti.		Outside of wall, Ta.			
	Still.	Windy.	Diff.	Still.	Windy.	Diff.	Still.	Windy.
Beginning...	68	68	0	51	46	5	13.5	0
After 1 hour.	46	41	5	46	39	7	13.5	0
After 2 hours.	42	36	6	42	35	7	13	0
After 10 hours.	28	19	9	28	18	10	10	-2

II.—With 20-Inch Wall.								
Time.	Inside air, J.		Inside of wall, Ti.		Outside of wall, Ta.			
	Still.	Windy.	Diff.	Still.	Windy.	Diff.	Still.	Windy.
Beginning...	68	68	0	57	55	2	+7.5	-1.5
After 1 hour.	53	51	2	53	51	2	+7.5	-1.5
After 2 hours.	51	49	2	51	48	3	+7.5	-1.5
After 10 hours.	42	38	4	42	38	4	+7.5	-1.5

LOSS OF HEAT IN TEN HOURS.

Because of the evenness of the temperature of the outside wall the heat losses to the outside air continued while the cooling process was going on in the same ratio as during continuous heating. The largest difference was shown in still weather with the 10-inch wall, when 46,460 heat units were lost during ten hours of heating, while 43,552 heat units were lost during ten hours of cooling. Even this small difference of 7 per cent. disappeared in windy weather, when, in ten hours, about 58,000 heat units were lost, whether we continued to heat or al-

lowed the space to cool. With the 20-inch wall there was hardly enough difference worth mentioning, as there were 30,580 heat units lost in still weather and 35,580 heat units lost in windy weather.

HEATING

Having shut off the heat, we must sooner or later arrange to heat the room to make it habitable. If, for instance, a room that has been allowed to cool over night in, say, ten hours, should be warmed in two or three hours, then the question arises, How much heat must be brought in?

To illustrate this, the theory was tried on the room with the 20-inch wall, the outside temperature being - 4 degrees F. in windy weather. After ten hours of cooling the inside air had a temperature of 38 degrees F., the

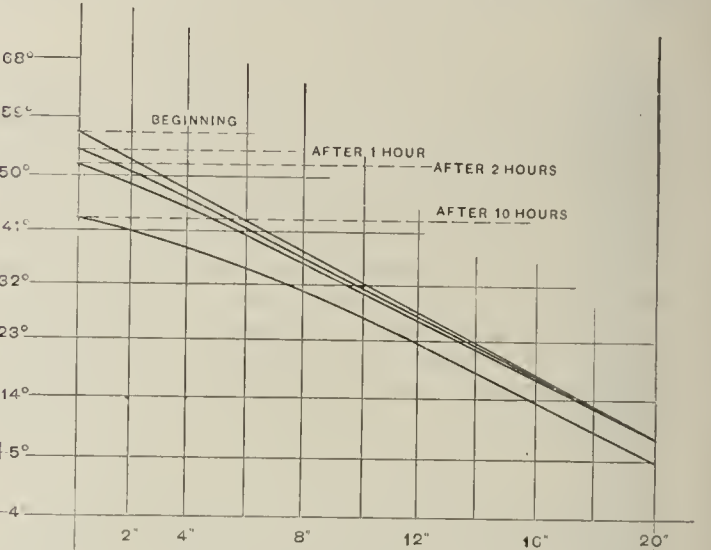


Fig. 2.—Curves Showing Temperature at Different Depths of a 20-Inch Wall.

inside surface of the wall also 38 degrees F., and the outside surface of the wall was - 1.5 degrees F. This was the state of affairs at the beginning of the period of heating.

The intention being to restore the temperature of 68 degrees F., to do this we would require for a difference in temperature of 72 degrees F. 3520 B. T. U. in windy weather, to which, according to Recknagel's Kalender, we must add for periodical heating 20 per cent.,* which will be confirmed as correct if we come near the mark in two hours. To this I add 25 per cent., which is customary when the exposed wall points north, northwest or northeast, as I do not intend to depend on the warmth of the sun to help. Hence, there is in all 45 per cent. to be added, according to which we need 3520 x 1.45 = 5104 B. T. U. of heat to be supplied per hour, giving the following temperatures:

III.—Heating.			
Time.	Inside air, J.	Inner side of wall, Ti.	Outer side of wall, Ta.
Beginning	38	38	-1.5
After 1 hour.....	63	44	-1.6
After 2 hours.....	65	47	-1.7
After 3 hours.....	68	49	-1.8
After 10 hours.....	74	55	-2

After a long time of continuous heating we will have, with the same amount of heat supplied, the following temperatures:

	Inside air, J.	Inner side of wall, Ti.	Outer side of wall, Ta.
After x hours.....	86 degrees F.	70 degrees F.	-2 degrees F.

This shows that even though the inner air temperature is raised very rapidly, that of the inner surface of the wall rises very slowly.

After two hours of heating the inside air temperature is not far from the required 68 degrees F., but the inside surface of the wall, which has a known influence on the comfort of the tenant, is more than 7 degrees F. colder than in a room that, having been heated to 68 degrees F., only reaches this temperature (55 degrees F.) in from nine to ten hours.

After three hours the room has the required temperature of 68 degrees F., yet the inner surface of the wall is

* Rietschel says, add 28 per cent. if the room is to be heated in two hours, and 19 per cent. if it is to be heated in three hours in periodical or interrupted.

still 6 degrees colder than it would be after a long period of heating. The outer surface of the wall continues to lose heat, and does not seem to feel the changed conditions on the inside; the amount of heat lost to the outer air is more than is gained from the inner air.

The diagrams presented in Figs. 1, 2 and 3 show in curve form what is shown in the tables in figures.

Fig. 1 illustrates the process of cooling, as shown in Tables I and II. The horizontal lines indicate the temperatures, and the vertical lines the time. Of the curves, the upper one is for a 20-inch wall in still weather, the second for 20-inch wall in windy weather, the third is for 10-inch wall in still weather, and the lower one for 10-inch wall in windy weather.

Fig. 2 shows the temperatures at different depths of the 20-inch wall.

Fig. 3 illustrates the process of heating, as shown in Table III. The curve *a* shows the inner air temperature,

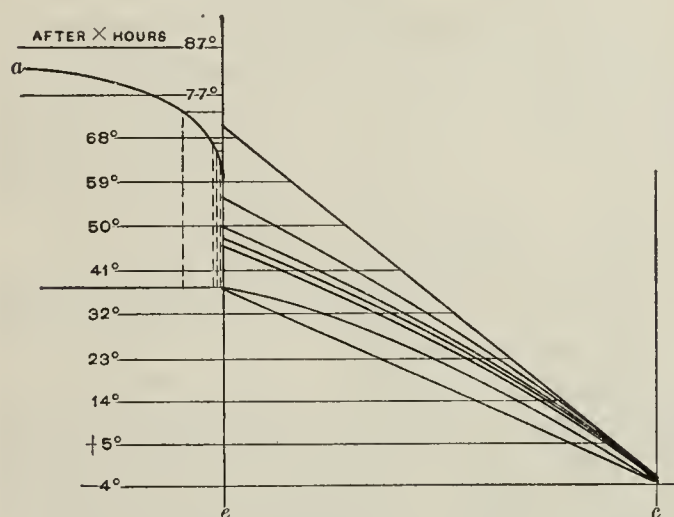


Fig. 3.—Curves Showing Process of Heating Indicated in Table III.

and the dotted vertical lines to the left of the center line *b* show the time, the center line being the beginning, and then one, two, three and ten hours later. The vertical center line *e* is the inner surface of the wall, and the right-hand vertical line *c* is the outer side of the wall.

STOPPAGES IN PIPES.

BY LISTENER.

It is not uncommon for the heating or plumbing system of a building to give trouble from improper piping or bad workmanship, and it requires, in some instances, a rather broad knowledge of the principle involved in the work to locate the cause of the trouble and apply a remedy. Three cases of stopped pipes have recently been brought to my notice which it may interest the trade to hear about. A large heating contracting house who made a specialty of a particular class of work received a contract from a good customer for the heating of his own residence. Naturally, it was desirable that everything reasonable should be done to give this customer a good and satisfactory job. The workmen in charge were instructed to be careful in all the details of the work, and the job was finished during the summer. After its completion the coal bins for the heating apparatus and for the kitchen fire were filled with fuel nearly to the ceiling. When the winter came on the plant was fired and shortly the complaint was received that a portion of the building could not be heated. Immediately workmen were sent to see what caused the trouble. Some insignificant changes were made without relief, and a visit was necessitated from one of the firm, who had served his time regularly as an apprentice and pipe fitter. On reaching the cellar he found a long pipe ran along one wall toward the portion of the building which was not properly heated. This pipe made a turn before reaching the risers to the unsatisfactory radiators. He immediately inquired whether this pipe had a pitch all the way to the risers, so that any air that

might accumulate in the pipe could escape through the risers. He was assured by the workmen that this pipe was all right. Notwithstanding the darkness in the cellar, and the fact that the coal in the bins nearly reached up to the pipe, he was satisfied that the trouble must be at a point where the pipe made the turn. It was only after he had applied a level to the pipe and crawled along over its entire length that he discovered that the pipe ran up to the point where it made the turn and down from that point to the riser, and that this method of piping allowed sufficient air to accumulate in the bend to fill the pipe entirely. The workmen naturally were discomfited and the inspector somewhat exasperated. It simply required an adjustment of the pipe hangers to preserve a perfect pitch throughout the line of pipe, when there was no further trouble.

In another instance a heating contractor and all of his workmen had endeavored unsuccessfully to locate the cause of the trouble with the heating system, and a heating engineer was employed to discover the cause of the failure. The plant was equipped with a water feed regulator and a damper regulator. When the expert arrived on the spot he opened the feed door to allow the fire to cool down, and then fired again and watched the operation of the plant and its appliances. Finding that the damper regulator acted in a peculiar manner, he began a study of the piping, and finally deciding that the failure to heat and the peculiar operation of the damper regulator could only be caused by a stoppage in one of the pipes, he stated that a certain pipe was stopped. Such a positive assertion was met with an equally positive doubt on the part of the heating contractor and his employees, but as there was a union on this pipe the union was disconnected and the pipes sprung apart, a wire being pushed into one end, showing that it was clear, but on inserting the wire in the other piece it encountered a wooden plug. Further investigation showed that when the damper regulator was attached it did not operate, owing to the failure of the workmen to understand how to connect it properly, and they had discovered that by stopping this pipe the damper regulator would work, and with no consideration for the consequences to the operation of the entire heating plant the pipe was stopped in order that the damper regulator should work properly.

In another case a plumber was called upon to find why it was impossible to draw water from one part of a system of plumbing which had recently been completed with lead pipe. After a number of experienced workmen had inspected the piping and stated that there seemed to be nothing wrong, a young workman of a studious nature and inquiring turn of mind was sent at the urgent request of the owner to satisfy the complainant for a time, without supposing that the trouble would be located and remedied. The young plumber knew that if pipes were open in a plumbing system, where there was a good pressure of water, nothing could hinder water flowing from the faucets on any part of the system when the faucets were open, and decided to take along with him his metal pot and wiping kit. His visit to the owner resulted in an inspection, carried on in a similar manner to that of those who had inspected before him. The owner took him through the building and he viewed, with his hands in his pockets, all of the different pipes, paying careful attention to all of the wiped joints that the numerous pipes required, owing to their length. One wiped joint excited his suspicion as to its being perfect. It did not differ materially in appearance from others, yet it had a peculiarity which attracted the attention of the young plumber. He explained to the owner that he believed that in wiping that particular joint the pipe had been burned and that the pipe was full of solder, and at his suggestion the water was shut off. He then cut out the joint, and, as he suspected, found that the pipe had been burned through and was filled with solder. Then, by loosening the tacks which supported the pipes and pulling on the ends, he succeeded in stretching the pipe enough to bring the ends together so that a new joint could be wiped. After preparing the joint and wiping it, the water was turned on to the building and there was no further trouble in drawing water from the faucets.

SOIL PIPES.

The following comments of a special contributor to the *Decorators' Gazette and Plumbers' Review* of London on the material selected for soil pipes by the authorities there will be of interest to the plumbing trade:

The recently published by-law of the London County Council on drainage, by which soil pipes may be fixed inside of new buildings, but stipulating that in the event of their being so fixed they shall be of lead, calls prominently to mind the different opinions held in England and America on this subject.

Any one who understands plumbing and is possessed of a sense of humor can always enjoy himself by reading the opinions of writers on this subject. Whether the writer be English or American he has no hesitation in expressing his views. There is no room for two opinions. Each one knows all that is worth knowing on the subject, and opposite views are treated with deserved contempt.

One English writer says, "It ought not to be necessary to say a word on the material of which soil pipes should be made; but as there is a tendency in some quarters to use cast iron, it may be well to look at this matter and see what advantages lead has over iron. Lead soil pipe is smoother and cleaner in its action than cast iron pipe, and is therefore more wholesome; and, being of a closer texture, it is not so corrosive and is consequently more durable. Then the joints and connections of lead soil pipes are more to be depended on. . . . Lead pipes will stretch without breaking their joints in the case of a little sinking of the building."

And again, "In seamless lead pipe for soil pipe the plumber rejoices in the use of a pipe which for soundness, wholesomeness, durability, compactness, appearance and the reliability of its wiped solder joints . . . is, as proved by experience, superior to earthen ware, stoneware, zinc, copper, cast iron or wrought iron pipes."

The same writer insists on seamless or drawn lead soil pipe, as he acknowledges a danger from the seams of hand made pipe. In what respect the danger arises from a soldered seam, seeing that the soldered joints are absolutely reliable, the writer does not explain.

Another English writer says, "Undoubtedly lead is the material given us for soil pipes." He advocates hand made pipe, as sheet lead is so much purer. Zinc and other impurities enter largely into the substance of drawn soil pipes. Again, it is very difficult to get drawn soil pipe with an even thickness all around. Most of it is thicker at one side than the other. Even if the thickness is regular at the ends, it is not so throughout its length. He adds, "It is all fudge about good soil pipe giving way at the seams."

Yet another Englishman writes, "There is no better material for soil pipe than lead." It is neater, takes up less room, can be bent to suit any position. It is smoother inside and therefore a pipe of the same size will pass more water in a given time. Or, to pass a given quantity of water a less pipe can be used. Cast iron is only used on account of its cheapness.

A Scotch writer does not deal with the question directly, but assumes the soil pipe will be of iron, and points out that lead needs repairs and renewals from three causes—putting in pipe of too light substance, improper fixing and corrosion, the latter due to want of ventilation.

An Irish writer says, "The best material for soil pipes is undoubtedly drawn lead piping. It possesses the qualities of smoothness of surface, freedom from corrosion, pliability in bending, security in jointing and value of old material when worn out." The last is somewhat of a favorite argument.

One American writes, "The advantages of cast iron over lead are many. In the first place it is cheaper; but its chief superiority lies in its being lighter, stiffer and stronger and less liable to accidental injury. Thin lead pipe of large diameter is necessarily weak, while thick lead is too heavy and too costly for use. Lead is difficult to fix. We could scarcely wish for a better material than iron. It is so easily cast into any desired shape."

Another American says, "I shall not dwell upon the well-known defects of lead soil pipes; although still the rule in England, they have, fortunately, in this country, become a thing of the past, and when found, upon examination of houses built years ago, are invariably condemned and removed."

The same writer says, "Tarred or enameled iron pipe is fully as smooth as lead pipe, and the iron pipe is thereby well protected from corrosion. The large variety of special fittings enables the plumber readily to adapt his iron pipe to almost any position; iron pipe should not take up a great deal more room than lead pipe of the same bore. Well calked joints of heavy cast iron pipes and well made screw joints in wrought iron pipes are just as sound and trustworthy as wiped joints in lead pipe, and any good mechanic is able to make them. Urine does not

corrode an iron soil pipe, protected by a coal tar pitch solution or by enamel, more than a lead pipe. The outside of iron pipe can be efficiently protected from rusting by paint, coal tar pitch or enamel. But while iron pipe is fully equal in all respects to lead it has great advantages over it. Lead soil pipes are very heavy, and, therefore, liable to sag and split open, to have holes eaten into them by rats and have nails driven into them by carpenters, and also to corrode, and they require much greater skill to put up, and involve more expense; therefore, the statements made in favor of lead prove nothing, although they demonstrate the absurdity of bricking soil pipes into a wall, and the necessity of so placing them that they are at all times readily accessible for inspection, and also prove, what few people seem to realize, that the drainage system of a house requires periodical testing and inspection just as much as a steam boiler or piece of machinery."

Again, "The use of wrought iron for soil pipes is of a more recent origin than cast iron. In the Durham system of house drainage wrought iron is used exclusively for all pipes above ground, whether drain, soil, waste, leader or air pipes. By using the standard wrought iron lap welded coated steam pipe in works of house drainage one great desideratum is easily attained—i. e., tight joints; for screw joints in steam pipes can easily be made sufficiently tight to stand a heavy internal pressure, such as, for instance, the pipes are subjected to by testing them with a force pump and a manometer, or by the water pressure test. Another advantage wrought iron pipe offers is the lesser number of joints required. For steam pipe comes in lengths up to 20 feet; it can be cut according to measurements so as to run from floor to floor without intermediate joints. A further point in favor of such pipe is its uniform thickness, its great strength and the fact that every length is tested at the mills by hydraulic pressure."

It is somewhat surprising that all the writers on one side of the Atlantic should unanimously come to one conclusion, and all the writers on the other side be as unanimous against it. It is possibly due to the fact that all the British writers are master or foremen plumbers, while the Americans are civil engineers. The former approached the question with a trade bias as well as the usual British conservatism. The latter were not so hampered in looking for a solution, and cared not how revolutionary the change might be.

The sanitary problem was tackled in both countries about the same time. The dangers of defective plumbing were recognized by both. Old lead soil pipes were found by both to be perforated by corrosion at their upper parts, allowing bad smells and dangerous gases to escape.

The English condemned the want of ventilation, and, as an added precaution, when renewing soil pipes placed them outside the buildings. The Americans condemned the lead and as an added precaution ventilated the soil pipes.

The Americans, on account of the climate in the Eastern, Middle and Northwestern States, could not place the soil pipes outside. They therefore made drastic by-laws—which they call city ordinances—and appointed plumbers as inspectors to see the by-laws enforced. The drain when in or under the cellar of a house is also called the soil pipe, and is of the same material, so that, as plumbers say, "The soil pipe extends from 2 feet outside the front wall to 2 feet above the roof."

Having decided on the best material of which to make soil pipes, each writer appears to think it necessary to depreciate the material so chosen on the other side of the ocean.

Experience gained as a sanitary inspector certainly indicates heavy iron as the best material for inside soil pipes. During the inspection of one of the largest hotels in London, when a chemical test was applied to the soil pipes, several, which were inside the building, were found to be defective. On examination one, which passed near the kitchen, was found to have connected with it the waste pipe from a kitchen sink. The hot water occasionally passed down the pipe and buckled it out of shape, and in two places the pipe was broken. In one of the bedrooms, where the test gave a result, on removing the casing, chisel marks and cuts were found. In another bedroom nails had been driven through the pipe. In another business establishment, on uncovering the soil pipe, in consequence of it having been condemned, it was found to be perforated with nails.

In the basement of a school some water closets were fixed, connected directly with the drain. Some years afterward alterations were made, and in taking down the partition between two closets it was found that one of the plugs driven into the wall as a fixing for the partition had been driven right through a soil pipe built into a chase, and into the joint in the brick work behind it.

None of these accidents could have occurred if the soil pipe fixed inside the buildings had been of iron.

St. Louis Master Plumbers.

The annual meeting of the Association of Master Plumbers of St. Louis, Mo., was held in the Century Building on December 16. After hearing the reports of the officers and transacting the usual business, the following officers were elected for the ensuing year:

President, James P. Carroll.

First Vice-President, John F. Reardon.

Second Vice-President, P. H. Callahan.

Treasurer, A. F. Fetting.

Corresponding Secretary, J. F. Corrigan.

Financial Secretary, O. B. Hervers.

Sergeant-at-Arms, A. L. Kiel.

Conference Committee: H. D. N. Doerner, P. J. Whelan and William Norris.

Auditing Committee: John M. Peters, John Frost and William Norris.

Sanitary and Heating Goods in Russia.

A contributor to the *British Trade Journal*, in an article on openings for the introduction of British manufactures into Russia, has the following to say in regard to the market in that country for sanitary and heating goods:

SANITARY APPLIANCES.

A highly important opening for a large class of manufacturers in England has been recently created by the efforts which the Government, aided by the *Zemstva* in all the more important provinces, are now making for a reform in sanitary matters. I can here only indicate a few important facts which intending exporters should bear in mind. The physical difficulties to be encountered in Russia are mainly due to the climate and geographical position, and a Russian architect, holding a highly influential position, informs the writer that a large fortune awaits the man who can succeed in overcoming them.

In the great majority of the provincial towns the houses are absolutely unprovided with any sanitary installation. This condition of things is distinctly contrary to the law, which is now being more strictly enforced. The difficulties in the way of reform are, however, considerable. In the smaller towns there is often practically no drainage system, and even in the larger it is extremely imperfect. The expense that improved systems of drainage would entail, if organized as they would be in England, would be altogether beyond the means of the local authorities at this moment. Besides this, even where some sort of drainage exists, the uniform flatness of the country as a rule, and the absence of an effective water supply, immensely increase the difficulty of flushing the drains during the six months of winter, when the ground is frozen to a depth of over 3 feet. From this it will be seen that, except in the larger towns, the use of any closets in which water is the sanitary agent is entirely impracticable. Systems in which earth, ash, or some similar inexpensive substance can be employed are what are needed, but no appliances fully meeting the Government requirements have as yet been brought forward. Cheapness and simplicity in construction are absolutely essential. The same physical difficulties in connection with drainage have led in many quarters to a growing demand for some effective system of "destructors" for household and street refuse, which could be employed in the smaller towns.

STOVES.

The question of fuel is now one of considerable difficulty in a large part of Russia, not only in factories, but for domestic purposes. Notwithstanding the immense forests in the north and east, the total area of woodland in the rest of the country is not proportionately larger than in France, while in a large part of South Russia it is actually smaller than in England. As wood for fuel cannot be conveyed for any considerable distance, petroleum for cooking purposes is now very largely used, and there is an immense demand for cheap and practical stoves for household use. There is also an enormous market for the cheapest descriptions of petroleum lamps. These are now chiefly supplied by Germany, but many of the cheaper kinds are so dangerous in their construction that in several Governments their sale is prohibited. In Russian villages, in which the *izbas* are constructed of resinous pine timber, crowded together and straw thatched, a single dangerous lamp is a peril to the whole community. Perfectly safe petroleum lamps or lanterns, of a price within the purchasing power of the peasantry and the poorer classes, would be sure of an immense sale in Russia, where the risk of loss of life and property by fire is an ever dreaded danger.

In those districts in which wood for fuel is practically unobtainable, charcoal, which can be more easily transported, is now being extensively used. The charcoal stoves are of many different kinds. The portable ones, resembling those in use in France, are imported from Belgium. Peat is also largely employed over the greater part of Russia, and a new and very practical form of stove, specially adapted for this fuel, has recently been introduced from Germany.

Water Waste and Its Causes.

The city of Montreal has been investigating the uses made of the city's water supply, says *Municipal Engineering*, and finds many which are unauthorized and not paid for. Meters are inserted with great benefit to the city's revenues, first in cash payments for water used, and later in reduction in use of water formerly not paid for. The last report of Superintendent Janiu covers a period of 12 months ended October 31, during which time 36,066 dwellings were inspected and 2550 defective fittings were discovered, which wasted on estimation 43,562 gallons of water each hour. Supposing these fittings were out of order for a fortnight it would mean a waste of 15,000,000 gallons of water, which at the cost price of 8½ cents per 1000 gallons would cause a money loss of \$1300.

This simple process of calculation serves to explain how great must be the annual loss which the city suffers from the distribution of water. The report draws attention to the impossibility of discovering all the leakages, but declares that the moral effect must far surpass the actual money saved, which in cold figures would mean the difference between \$3707 collected and \$3482 paid out in wages for the inspectors.

A few examples show the character of cases discovered by the inspectors:

Inspector Kelly discovered an unmetered service pipe, running into a tannery. In two weeks a meter put the indebtedness at \$10.

Another proprietor got into the habit of pumping his cellar dry without paying for it. A meter was installed, and the account became \$154 at the end of the year.

The proprietor of a dining room kept his guests cool by using two fans. One day a civic inspector was hungry and he entered. Before he came out a water meter was ordered, for the working of which the city drew \$8.

Even an electric power station wanted its water free. The buzzing machinery made the management forgetful of its obligation to the city for using the water to cool the heated bearings and boxes. The account was metered at \$203, representing the cost of three arc lights for a whole year.

Inspector Salmon noticed a ginger ale manufacturer was using too much water for the good of his trade. A meter showed he was a debtor of \$30.

Inspector Whelan rated a large number of steam engines, and incidentally found six which were not rated at all, and the civic revenue grew by \$260.

The city of Evansville is discussing meters as a means of cutting the waste out of its present supply of 167 gallons per capita per day, especially since it will soon be necessary to install a filtration plant. The experiences of Montreal will doubtless be paralleled when the services to which meters should be applied are searched for.

Heating and Plumbing Notes.

THE AMERICAN TUBE & STAMPING COMPANY, who recently acquired the business, plant and good will of the Wilmot & Hobbs Mfg. Company of Bridgeport, Conn., are contemplating improvements which will greatly increase the output of the plant of that concern. There is said to be a likelihood of the works being removed from Bridgeport in order to secure better facilities, but no definite decision on this point has yet been arrived at. The plans for extension include the building of an open hearth plant with a capacity of from 200 to 300 tons of steel per day. At present the Wilmot & Hobbs plant is dependent upon the open market for a supply of steel billets. The capital stock of the American Tube & Stamping Company is \$2,800,000.

The plumbing establishment of John I. Kopp, at Boonton, N. J., was destroyed by fire last week.

THE ALLEN & VAN NEST COMPANY, 82 Centre street, New York, have the contract for installing a new heating apparatus in the Reformed Church, at White House, N. J.

THE HAWAIIAN SUPPLY COMPANY of Honolulu, H. I., have favored us with a copy of the special industrial edition of the *Evening Bulletin*, published in their city. The paper gives fine half-tone illustrations of many of the plantations, from which it will be readily seen that the steam fitter could find plenty of work in installing power plants and the plumber be busily occupied in arranging for a water supply.

THE PENINSULA HEATING & PLUMBING COMPANY of Calumet, Mich., have the contract for installing the heating apparatus in the Douglass House, at Houghton.

THE City Council of Los Angeles, Cal., are considering an ordinance to do away with fees for plumbing permits and to provide for licensing plumbers upon a varying schedule, ranging from \$25 to \$40 a year for a license.

J. H. LAWLESS, 131 Third street, Jersey City, N. J., reports an active demand for his patent Plumbers' Force Pump, a shipment of these Pumps having recently been made to the Navy Department of the United States. The Pump is so constructed that it will act either as a suction Pump or a force Pump, and a high pressure can be raised with it. The metal from which the Pumps are made is said to be capable of standing a pressure of 1000 pounds.

THE NATIONAL STEAM ECONOMIZER COMPANY of Springfield, Mass., bid \$8293, and were awarded the contract for heating the new Chestnut Street School in that city.

BLAKE & ANDROS, 28 Portland avenue, Boston, Mass., are sending out, with their good wishes for the season, a wall calendar 12 x 18 inches in size, advertising their B. & A. Elbow Valves and Crescent Hot Water Heaters and Steam Boilers. The monthly calendar tablets which are attached to the bottom of the hanger have the dates clearly printed in bold lettering, and the sheet is provided with a brass eyelet, making it handy for hanging upon the wall.

NORRISTOWN COVERING COMPANY, Norristown, Pa., are sending out a catalogue showing their Steam Pipe and Boiler Coverings, Asbestos Cements, Sectional and Block Coverings, Asbestos Goods, Mineral Wool and Hair Felt.

J. B. CARROLL, 36 La Salle street, Chicago, sent out an illuminated Christmas greeting circular, calling attention to the Hahn Acetylene Gas Burner. This circular is a noteworthy specimen of fine printing and attractive color work.

A FIRE, doing slight damage, visited the plumbing establishment of William M. Anderson, 128 South Twentieth street, Philadelphia, last week.

EDWIN F. PORTER of Boston, Mass., has invented a gas heater for use in connection with electric cooling fans, so as to make these fans serviceable all the year round. When in operation, the fan keeps up a circulation of air in the room, sending a warm current to all parts.

ZIEGLER BROTHERS, Aurora, Ill., sustained a loss of \$1000 by a fire in their plumbing establishment on December 17.

New Firms and Changes.

THE NASHVILLE STEAM HEATING COMPANY have been incorporated at Nashville, Tenn., with a capital stock of \$10,000 by Dr. Joseph P. Gray, J. T. Lellyet, W. A. Stewart, Charles F. Sharp and Edgar Jones.

THE GEORGETOWN HARDWARE & PLUMBING COMPANY, Georgetown, S. C., have been incorporated with a capital stock of \$5000, by S. S. Ingram, Chas. H. Bryan and others.

Telephones in farm risks, says an insurance paper, are likely to have an effect on fire losses of that class, if the plan of a policy holder near Wingate, Ind., is to be followed by others. A fire started in the roof from a defective flue. The farmer immediately telephoned his neighbors, and within a few minutes they began to arrive, on horseback, with teams, and across lots. A

bucket brigade was formed and the fire extinguished with \$200 damage. It is admitted that without the telephone alarm the risk would have been a total loss.

THE ART OF COLLECTION.

BY GENIAL

The most important work of every retailer at this season is getting in the money for goods delivered and work done during the year. Many merchants shrink from asking their customers for money, and there seems to be a very general reluctance, especially among the smaller business men, to go around with their bills.

It is a simple matter, however, to remove this feeling by making these business calls a matter of social pleasure, with the cash collecting feature as an incident. Men who devote all their time to business are apt to frown upon those who have cultivated the genial side of life, and kept themselves informed of all the fads that are dear to the hearts of their townsmen.

This is a wrong attitude, for it stands a man with bills to collect in good support to be able to meet his debtor on common social ground. It is apt to make the debtor feel that if he pays anybody he ought to make an effort to pay a man who has done good work for him and waited for his money in good humor, and who is cheerful in presenting an overdue bill.

No matter how the other man feels, make it a point to show him a friendly spirit when you present your bill. If he hesitates about paying at the time of application, tell him to set a date and say that you will endeavor to keep your creditors satisfied meanwhile. If he names a time, let him know pleasantly that you are depending upon him, as if he was a bank, and then be sure to be on hand at the time set. Of course, in pursuing this method, the books must have been kept up, and all the bills be ready, some to be mailed, but, in most cases, to be delivered personally.

Good humor, pleasant conversation and the evidence of a cheerful conviction that the money will be paid will generally secure, with the invitation to call again, an assurance that then the money will be forthcoming. With those who are haphazard in their financial matters, some discussion of them, with suggestions of how the debt may be gradually reduced, will be welcome, if tact is used.

All men warm to those who show confidence in them, and this confidence should be shown, even if it is felt that it can only be maintained by persistent effort on the part of the creditor to secure payment. There are men who hate to pay out money. But, when their bills are once paid, the friendship and custom of such men are assured if an occasional compliment is made on their reliability as to payment.

Good humor is an important factor in a successful business, whether in making sales or making collections, and it should be especially in evidence in all transactions at this season.

The construction cost of the Pan-American Exposition at Buffalo was \$9,000,000; of the Paris Exposition of 1900, \$10,000,000, and of the World's Fair at Chicago, \$18,000,000. In comparison with these figures the plans of the Louisiana Purchase Exposition, to be held in St. Louis in 1903, indicate that that exposition will far outclass any of its predecessors, for it is contemplated to spend no less than \$30,000,000 in construction work upon it. Moreover, the size of the exposition will greatly exceed that of its immediate predecessors. Its site covers 1100 acres; whereas the Pan-American covered 350 acres and the Paris Exposition only 173 acres.

Says the *Amalgamated Sheet Metal Workers' Journal*: "President Roosevelt has endeared himself to the workman and the friends of organized labor through the manner in which he made reference in his recent message to questions that concern the toiler. He has gone on record as being the first President of the United States to make mention of organized labor in a Congressional message. The views expressed by him on this subject, and others of interest to the worker, are such as inspire confidence."

What Should a Cornice Maker Know?

BY EXPERIENCE.

The answer to the above question seems to be very simple. He should know how to make cornices. But how many cornice makers at the present time are able to construct a cornice complete, from the time the drawing is received from the architect to putting up the work on the building? When one comes to think over the question seriously it is but natural that all cornice makers could not lay out and complete contracts from the scale drawings. An army could not be composed of all officers, but it must have a majority of soldiers. Men are not all gifted alike.

It is not necessary that a cornice maker should know all branches of the work, for in large shops some men do nothing but cutting, others forming at the brake, some put the work together and others set up the work at the building. A man who is an expert at the machine may not be worth one-half his wages when soldering at the bench. Another may be an expert in all branches.

THE ALL ROUND MAN HAS A BETTER CHANCE.

It may seem odd, but it is nevertheless true, that in a large concern the cornice maker of to-day has a better chance of being employed—as pattern cutter, former at the brake, solderer, outside hand or in whatever branch he is most proficient—than in a small shop, where perhaps there are only a few men, who must be proficient in all branches. A cornice maker who thoroughly understands his business from A to Z is the one who will hold his job, while the others are only given work until the rush is over and are the first to be dropped. There are many men who are too old to begin the study required to make them real cornice makers, or learn to read scale and full size drawings and construct any piece of sheet metal work. But there are many young men, who will be the cornice makers of the future, and to whom the writer will give his past experience, which may guide them in their work.

KNOWLEDGE IS POWER.

A cornice maker who can read plans, draw out his details, cut out the patterns, form, solder, put the work together and erect the work on the building is usually the best paid man. Knowledge is power in this and every other trade. By all means let the cornice maker study, so that he will be able to complete contracts from architects' drawings to the erection on the buildings.

The writer laid the foundation of his training by having the good fortune of obtaining employment in a shop where he had a chance to learn. Twenty-five years ago, when ten hours was a day's work, an apprentice had to be in the shop from 6.30 a.m. to 6 p.m.; then clean up shop, which took about one hour, thus returning home about 7.30 p.m., which gave very little time for study. By doing favors and being polite to the men there were many little things learned which proved useful later on. This work from 6.30 a.m. to 7 p.m. lasted during the term of apprenticeship for four years, when another apprentice was taken and an advancement was made, after which the hours were from 7 a.m. to 6 p.m. This gave time for study at home at night.

HOME STUDY.

In the shop tracings of some sketches of cornices were made, the employer always taking an interest in what work was done in this direction. For use at home the writer obtained a small drawing board 16 x 20 inches, with a T square, a 45 degrees triangle and a cheap set of brass drawing instruments, with which the start was made in drawing and pattern cutting, with the help of the shop foreman, a first-class mechanic from the old country. Very little progress was made in this manner, however. The writer then entered the evening classes in Cooper Union in New York.

STUDY AT COOPER UNION.

In justice to that institution, founded by Peter Cooper, let it be said that all the success that the writer has met with in drawing and pattern cutting is due to that

school, where all is free to rich and poor alike. The writer then spent five years in the architectural class, four years in the mechanical class and two years in modeling in clay, two evenings from 7.30 to 9.30 p.m. in each class per week. Thus being engaged for two years every night; for two years, four nights per week and for one year, two nights per week. So thorough is the instruction given that, although the writer had no previous knowledge in drawing, he received the gold prize at the completion of the fifth term in architectural drawing. As before mentioned, these classes are all free, and any ambitious young man can obtain instruction there if he will sacrifice his evening pleasures for study.

WHAT WAS TAUGHT.

The five years of instruction in architectural drawing taught how to thoroughly read plans; the four years in mechanical drawing gave problems in geometry, projections and developments, while the two years in modeling in clay gave a good idea as to how the clay models were made, plastic casts taken from same, &c., which at that time (20 years ago) was required to be known, as ornamental stamping of small objects such as leaves, rosettes, balls, &c., was done in the shop. At the present time this course in modeling in clay could be omitted, as large concerns furnish this stamping cheaper than what it could be made for in a small way.

PATTERN DRAFTING.

After graduating from these classes the writer devoted his entire time, after working hours, to pattern drafting. Any work arising in the shop was noted down, and the drawing and pattern were made at home, using heavy paper bent over the blade of the knife to prove the patterns. The following books also proved of great help: Vere Foster's four books on "Practical Geometry," named "R¹, R², R³ and R⁴," the well-known "Metal Worker Pattern Book," "The Production of Curved Moldings in Sheet Metal," "The Compendium of Architectural Sheet Metal Work," and another book on cornice work by Vaile. As it is sometimes necessary to make small perspective views, the following two books were useful: "Principles on Perspective" and "The Essentials of Perspective."

There is another book, which, though mentioned last, was not the least in importance, and that was a German book on pattern drafting, loaned by a fellow workman. It was written by Th. Raetz, and entitled "Geometry for Tinsmiths, Coppersmiths, &c." In it the methods of triangulation were given. This book was published over 43 years ago in Berlin.

MORE CHANCE FOR STUDY TO-DAY.

Fifteen years ago, through hard study, the writer obtained charge of one of the large shops in roofing, cornice, skylight and sheet metal work, employing between 25 and 30 men, and he still has charge of the same shop. In looking back one can truly say that there is more chance to-day for study and advancement than there was 24 years ago. At that time there were no trade schools, as there are to-day, where a young man could learn in the day time or at night what he fails to learn in the shop.

TRADE SCHOOL INSTRUCTION.

In the class in sheet metal work at the New York Trade School students are instructed for a small sum in cornice, skylight or any other sheet metal work in which they are interested. In this school the student is taught how to use the tools, cut, solder, &c. He then receives blue prints drawn to a scale of different kinds of cornice work, from which he is instructed how to make his full size details, develop his patterns and cut, form and solder the work together at the bench. The evening course requires three years' attendance, while the day course is completed in one year. Each student has his own bench, tools, drawing boards, T square, triangles, &c.

READ AND ASK QUESTIONS.

A young man who wants to keep posted on his trade and in pattern drafting must read trade papers, follow up all articles given therein and by all means ask

questions when in doubt, not only for the information which will be received, but because the question and answer will be read by many more who will profit by it. Give the result of your own experience, because this educates others and stimulates them to do likewise. A good trade paper, with instructive articles and many correspondents, is truly a correspondence school to its readers. If the young men of to-day will make some effort to learn, there will be no asking in ten years from now "What should a cornice maker know?"

WASH BOILER COVER.

A tinner is often called upon to make an oblong wash-boiler cover, having semicircular ends, such as is shown in plan in Fig. 1. These covers are usually made in two pieces, seamed in the center. Let A B C D be the plan

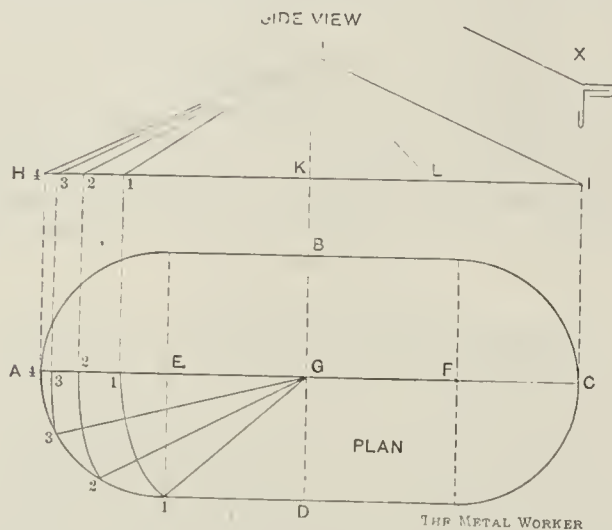


Fig. 1.—Plan, Side View and Diagram of Triangles.

view or shape of the boiler over which the cover is to fit, the semicircular ends being struck from the centers E and F. Through the centers E and F draw the line A C, which bisect or divide into two equal parts and obtain the point G. At right angles to A C and through the points E G and F draw lines, as shown. Now draw the side view of the cover, as shown by H I J. Take the distance from D to G in plan, and place it, as shown, from K to L inside view, and draw a line from L to J, which will give the amount of stuff required on the line B G or G D in the plan. The next step is obtaining the diagrams of triangles used to develop the pattern. Divide one-half of the semicircle into equal spaces, as shown by the small figures 1 to 4, and draw lines to the central

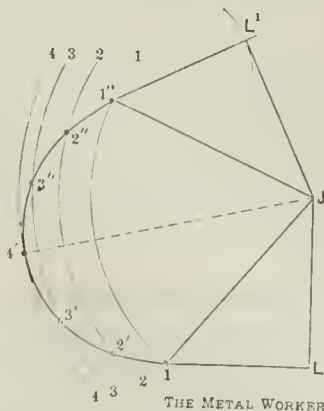


Fig. 2.—Half Pattern of Cover.

point G. Then using G as center and radii equal to G 1, G 2 and G 3, draw arcs intersecting the center line A C at 1, 2 and 3. From these intersections and at right angles to A C erect lines intersecting the base of the cover in side view at 1, 2, 3 and 4, from which points draw lines to the apex J. Then will these lines represent the actual lengths on the finished cover on similar lines in plan. For the pattern draw any vertical line, J L, in Fig. 2, equal to J L in side view in Fig. 1. Now take the distance D 1 in plan and place it at right angles to J L in Fig. 2, as shown by L 1, and draw a line from 1 to J.

Now with J in Fig. 1 as center, and radii equal to J 1, J 2, J 3 and J 4 strike the arcs in Fig. 2, using J as center, as shown by 1 1, 2 2, 3 3 and 4 4. Set the dividers equal to the spaces in the plan in Fig. 1, and starting from the point 1 in Fig. 2, step from one arc to another having similar numbers, as shown by 2', 3' and 4'. In similar manner obtain the points 3'', 2'' and 1'', from which draw a line to J.

Now with 1 L as radius and 1'' as center describe the arc L'. Then with J as center and J L as radius, intersect the arc L', as shown. Draw a line from J to L' to 1'' and trace a curved line through the intersections obtained on the arcs, as shown, which will complete the half pattern of the cover.

Diagram X in Fig. 1 shows the construction of the cover, and the laps which must be allowed to the pattern.

A WOMAN TINSMITH.

At various times the active part that women have played in the different trades in which *The Metal Worker* is interested has been pointed out. There recently appeared in the *Evening Telegram* of New York an article in reference to a woman who has been an efficient helpmeet to her husband, Henry Muskat, who conducts a general tinsmith, roofing and cornice business on Fordham Road, near Jerome avenue, in the Borough of the Bronx, one of the suburbs of New York City. Mr. and Mrs. Muskat came to this country many years ago with but \$24, and they now conduct a successful business in a three-story building, which they own with all of its stock and equipment of tools and machines. Mrs. Muskat took an interest in her husband's work, and acquired the art of handling tinsmiths', roofers' and cornice makers' tools until she became a competent hand in any branch of the trade. She finds time, in addition to her household duties, to do a great deal of work in the shop, and, owing to a press of work at the time their new building was erected, she put on the entire roof herself. Mrs. Muskat is perfectly familiar with all the materials used, and frequently makes trips into the city to purchase stock. She takes a great deal of pride in her handicraft and her ability to work the various machines with which the shop is equipped.

FLASHINGS.

It is reported that the American Can Company will enlarge their Tin Can plant, at Whatcom, Wash., before the opening of next season, and that the changes contemplated will make it the largest establishment of its kind on the Pacific Coast.

The suits which have been entered against the striking Monongahela Tin mill workers at Pittsburgh, who were charged with disorderly conduct and riot during the recent strike, have been quashed, the prosecutors having withdrawn from the case.

We have received from John Plummer of Sydney, Australia, an account of the Iron and Steel works at Lithgow in the Blue Mountain district of New South Wales, in which Steel has been produced for the first time in Australia. An open hearth Steel furnace has recently been added to the plant, and the works also include a modern Sheet mill and a galvanizing plant. Native ores are used in the manufacture of the Steel. It is said that the State of New South Wales abounds in extensive deposits of Iron Ore, much of which is of great richness, and it is likely that the presence of this local metal will tend to stimulate Iron and Steel manufacturing in Australia.

THE DOWMAN MFG. COMPANY, 20 and 22 Trinity avenue, Atlanta, Ga., manufacturers of Galvanized Iron and Copper Cornices, Skylights, Dixie Ventilators and Hot Air Furnaces, have favored us with a copy of an attractive calendar for 1902, which they are sending out to their friends. The calendar, which is 16 x 23 inches in size, is fitted with metal strips at the top and bottom, and arranged for hanging on the wall. It shows a pretty picture in colors of three children, and the calendar proper is printed at the foot of the hanger. The company advises us that they recently secured the contract for the

Sheet Metal work for the new Piedmont Hotel at Atlanta, and also for the Florida State House at Tallahassee, Fla.

WE are advised by Follansbee Brothers Company, Pittsburgh, Pa., that there is no truth in the report which appeared in some papers last week to the effect that they were contemplating the erection of Tin mills.

GUMMEY, McFARLAND & Co., Philadelphia, Pa., have sold a large number of boxes of Pennsylv Old Method Tin Plates, 20 x 28, for recovering the roof of the United States Custom House, in that city, and advise us that there has been a growing demand for these Plates on important work.

THE WAUKESHA SHEET STEEL COMPANY, Waukesha, Wis., have under consideration the erection of a Tin Plate plant, to be run in connection with their other departments.

THE PARISH & BINGHAM COMPANY, Cleveland, Ohio, manufacturers of Metal Stampings, are having plans prepared for a two-story building, 50 x 300 feet, and they will also add another story to their present plant. The company are preparing to go into a new line—the production of Lithographed Tin Boxes, for which there is an immense demand. They have recently installed considerable machinery for this work, and are now occupying a large factory formerly used by the O. P. Clay Stampings Company for this branch of their business.

THE J. M. ROBINSON MFG. COMPANY, Cincinnati, Ohio, advise us that they have recently made a large machine for the Art Metal Construction Company of Jamestown, N. Y., intended for bending Sheet Metal in various shapes. Among the articles manufactured by the Art Metal Company are furnishing for library buildings in which nothing but Sheet Metal is now used. Sheet Iron can be bent so as to make it very strong, and able to bear up a great weight by being corrugated and treated in other ways which have been adopted for strengthening it.

THOMAS P. H. WHITELAW is forming a rolling mill company under the name of the Oakland Steel Works at East Oakland, Cal. The works will be designed to roll Sheets and to manufacture Corrugated and Galvanized Iron. The addition of Tin Plate mills is also contemplated after the Sheet mills get into operation, as well as a plant for manufacturing Tin Cans.

THE statement that the Youngstown Iron, Sheet & Tube Company would tear down Alice Furnace at Sharpsville, Pa., which they recently bought, and build a larger furnace is incorrect. The company bought Alice stack to supply their present wants and will begin the erection of a new blast furnace at Hazelton, where their works are located, in the early spring.

TRADE NOTES.

FARNHAM & JOHNSON, have succeeded Drew & Gale, 191 High street, Boston, as dealers in Metals, and will continue the business at the same location.

THE TURNER, VAUGHN & TAYLOR COMPANY, Cuyahoga Falls, Ohio, have issued a 16-page illustrated catalogue of their Chain Machinery, including the new Edgecombe Hammer, No. 1 Lightning Winder, No. 1 Link Cutter, Foot Hammer and Gas and Oil Furnaces for heating links for welding.

THE ILLINOIS PURE ALUMINUM COMPANY, Lemont, Ill., will spend about \$50,000 during the coming year in making improvements to their plant. The floor space will be considerably increased and a number of new machines installed. They make Aluminum Ware, Steam Jacketed Kettles, &c.

THE W. J. CLARK COMPANY of Salem, Ohio, report a lively demand for their improved Hose Couplers, known as the Quick as Wink. Their use on compressed air hose in shops where pneumatic tools are used is said to work a great saving of time. The W. B. Pollock Company, Youngstown, Ohio, having tried them in their extensive boiler works, have decided to discard the common coupler and use the Quick as Wink instead. Their order has been placed for 180 sets.

THE firm of McClamrock Brothers, wholesale and retail dealers in Mantels, Grates, &c., have been merged into the McClamrock Mantel Company, with a capital of \$25,000. The business of the concern will be considerably enlarged and extended.

THE SOUTHERN METAL COMPANY of Orangeburg, S. C., have been incorporated with a capital stock of \$10,000, to manufacture Agricultural Implements and Sheet Iron Specialties.

THE BRADFORD METAL STAMPING & MACHINE COMPANY of Bradford, Pa., have been incorporated with a capital stock of \$20,000.

H. M. SHIMER & Co., smelters and refiners of Babbitt Metal, Brass and Spelter, Philadelphia, Pa., have purchased a plot of ground 66 x 185.6 feet, at the northeast corner of Nineteenth street and Washington avenue, in that city. A one-story brick and corrugated iron building, 66 x 80 feet, will be erected for smelting purposes, and a furnace installed which will enable them to produce from 30,000 to 40,000 pounds of ingots per day.

THE KANSAS CITY DIE & MOLD COMPANY, recently organized, have located at 604-608 West Fifth street, Kansas City, Mo., where they are prepared to make all kinds of Dies and Molds. They make a specialty of Glass and Soap Molds, Embossing, Cutting and Stamping Dies. The proprietors are C. F. Bartholomees and G. Magnien.

THE MONSON-BURMAH SLATE COMPANY of Portland, Maine, are reported to be shipping their products, including Slate Sinks and Mantels, to Great Britain and Germany.

THE EXCELSIOR ASBESTOS MFG. COMPANY of New York City have been incorporated with a capital stock of \$25,000 by H. S. Predmore, B. F. Boscoe and L. J. Beerbower of New York City.

THE WATERBURY BRASS COMPANY, Waterbury, Conn., to meet the demand have increased their facilities for producing Brass Brazing Wire, and are now in a position to promptly supply the requirements of this trade. They advise us that a careful study of the use of this material and the knowledge gained through the production of a large variety of Solders has led to the manufacture of an excellent Wire. They would be pleased to furnish samples of this material as well as of the several grades of Spelter Solder manufactured by them upon request.

THE WILKE MFG. COMPANY, Anderson, Ind., manufacturers of the Plate Glass Interior and White Glazed Tile Refrigerators, have been compelled by the increased demand for their line of goods to build a brick addition, 56 x 156 feet, with a 7-foot basement, to their factory building, to be used for manufacturing and storage purposes, and are now in a better position to fill orders.

An idea of the remarkable growth of the International Correspondence Schools, at Scranton, Pa., during the ten years of the existence of the enterprise may be gained from the following statement given out by the institution: The total enrolled membership of the school, with their families, on the basis of five persons to a family, would people a city of nearly 2,000,000 population. The postage paid by the schools amounts to nearly \$300 a day, or \$100,000 a year. As the schools pay the postage to the student only, the above figures represent but half the revenue that the United States Post Office derives from the schools. Ten thousand checks are used monthly to pay the company's bills. The schools are the largest producers and consumers of books, bound in cloth or half leather, in the United States. One hundred and thirty-two persons are employed in Scranton in the publishing department, and two of the larger printing houses in New York City are mainly supported by the work of the institution. The number of pages of published matter distributed per annum amounts to over 24,000,000. At the present time the schools are erecting in Scranton what will be one of the largest private printing plants in the world. It will be 167 x 460 feet and four stories high, containing over 6¼ acres of floor space.

DISPENSING WITH RECEIPTS FOR REMITTANCES.

The past year has developed a change in the business routine of some of the large Hardware jobbing houses, by means of which an economy is effected. The reform in question is the giving up of sending receipts for remittances, in view of the fact that the check or draft is a sufficient voucher. In this way a saving in labor is effected, as well as in postage. This reform was put into operation last summer by prominent Western jobbing houses, and is now being taken up by others. It is generally referred to as working satisfactorily and occasioning very little friction in trade. The reasons for this action are thus given in a notice which was sent out to the customers of the house issuing it:

Beginning July 1 we will discontinue sending receipts for remittances, except those made in currency.

In explanation of the above would state that our object in so doing is to avoid what we consider an unnecessary labor and expense. For some years past we have been making our remittances without requiring acknowledgments of same, as we consider an indorsed draft answers all purposes of a receipt, and in case of a money order, or express money order being sent, the proof is in your town.

Remittances at all times should be made, if possible, by bank draft, express money order or post office order. Currency should never be sent if avoidable, and in case it is sent, it should invariably be by registered letter.

This action is in line with the tendency of the times. The plan is being adopted rapidly by many large concerns, and we believe it will soon be a very general custom, simply because it is in the line of economy and saving in which all will naturally share, and in which, therefore, all are equally interested.

Norvell-Shapleigh Hardware Company, St. Louis, go into the matter more fully and explain the reasons for their action in the following announcement:

Beginning August 1 we will discontinue sending receipts for remittances, except when made in currency.

This plan is being adopted very generally throughout the mercantile world, for the reason that it is in the line of economy and saving, in which, as all will share, all should be equally interested.

As the ordinary forms of remittances are in themselves their own best receipts, the sending of acknowledgment by the house receiving them is unnecessary, and is, therefore, "waste." Modern business methods are largely in the direction of preventing waste.

As far as possible all remittances should be made in one of three ways: Bank draft, express money order or post office money order. Records show that not one remittance out of 10,000 goes astray, and in the few cases where they do fail to reach their destination, if it is in one of the above forms, the proof of its having been sent is in your own town.

If you send us a draft, we have to indorse it before it will be accepted by our bank; our bank has to indorse it before it will be accepted back by the bank in your town and, therefore, this draft carries on its back the entire history of the transaction. If any question should arise about it, your bank will gladly furnish the necessary information. In the case of express and post office money orders, you not only get a receipt from the office, but that office can trace the money order through for you and show payment if desired.

We shall, of course, continue acknowledging the receipt of all remittances made in currency, whether registered or not.

The fact that receipts are not necessary has for a long time been recognized by business men, and many commercial houses have for years been refraining from asking them. The present reform is, however, a step in advance, as the trade are given to understand that receipts will not under ordinary circumstances be sent unless specially requested. The announcement made in regard to this matter by W. B. Belknap & Co., Louisville, Ky., will be of interest in this connection:

Customers will please note that, in accordance with a growing custom which readily recommends itself to business men, we will send receipts for remittances only when such are especially requested.

We have tried for the past ten years ourselves the plan of not asking for receipts; on the contrary, where we send checks we ask that no acknowledgment be made, and have yet the first case of complication to arise therefrom. In the light of this experience, we ask our friends to permit us to do away with this needless expense and multiplication of papers which all of us wish to avoid.

We have no remittances to speak of in currency, and as checks, drafts and express money orders are always returned to the sending point after being paid and canceled, you have at your hand all the necessary proof of payment, should question arise.

So little store is set by the old form receipt, that our ingenuity is taxed to put it in such form as will save it from the waste paper basket. Of course, special forms, vouchers, settlements by trustees and administrators, &c., will be acknowledged in the usual formal way, as will the remittances of such customers who particularly desire it.

The W. Bingham Company, Cleveland, Ohio, who have recently announced their adoption of the same policy, thus explain the matter to their customers:

No receipts for remittances by check will be sent by us after December 1, 1901, except on request. Checks bearing our indorsement are sufficient receipts.

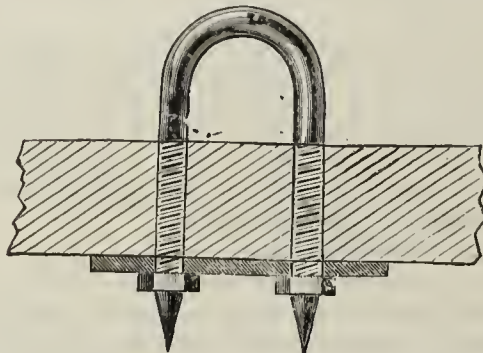
Vouchers and special forms with remittances will be interpreted as a request for a receipt.

We adopt this plan following a fast growing custom with business houses who find that it works admirably, and saves much labor.

There seems to be little doubt that this movement will still further extend itself throughout the trade, in view of its advantage as diminishing the labor and expense of doing business.

Safety Screw Staple.

William F. Schall, 61 Barclay street, New York, for whom Frederick Pfeifer, 88 Chambers street, New York, is the sole selling agent, is manufacturing the Safety



Safety Screw Staple with Slotted Counterplate, Three-fifths Size.

screw staple here illustrated. The feature of this staple is that it can be driven into or through a board, and quickly secured on the inner side by means of a rectangular slotted counter plate and two threaded nuts. It is especially recommended for store rooms, coal bins and similar places in apartments, flat houses, &c., which are much frequented by sneak thieves, who with a jimmy quickly and noiselessly withdraw the usual staple even when clinched. The sharpened points, if so desired, can be as quickly protected by forcing a piece of soft wood over them, holding it in position by driving a nail in the center of the piece through the slotted counter plate. The exact outer dimensions of the staple are $2\frac{1}{2} \times 1\frac{1}{8} \times 3-16$ inches. The wrought iron counter plate is $2\frac{1}{2} \times \frac{5}{8}$ inches outside, with a rectangular slot or opening $1\frac{3}{4} \times \frac{1}{4}$ inch, through which the sharpened legs of the staple pass.

The *Post* of Houston, Texas, says, regarding the output of the Beaumont oil fields: "The Russian field is said to have marketed 365,000,000 barrels of oil during 1900. If the Beaumont field can get 150 more oil cars into service within the next two or three months it will market more oil during the coming year than was marketed in Russia in 1900. The quantity marketed by the Russian field was equal to 153 cars per day, and there is no doubt that the Beaumont field will ship more oil than that if the cars can be procured."

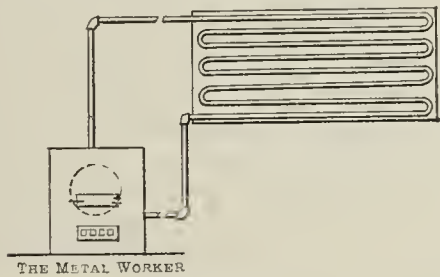
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

RETURNING CONDENSATION TO BOILER.

From E. T., Hilton, N. Y.—I have a customer who wishes to use a steam boiler for heating an evaporating chamber which is placed at one side of the boiler and above it, as shown in Fig. 1. Can the steam be carried to the pipes in the evaporator, and will the condensation return to the boiler, provided the return pipe has suffi-



Returning Condensation to Boiler.—Fig. 1.—Coil in Evaporating Chamber.

cient pitch to cause the water to flow? It is also desired to use the steam from the boiler to boil cider in a vat, which is about 5 feet distant from the boiler and slightly above it, as shown in Fig. 2. Can the condensation be brought back from the heating coil in the vat? Will it be necessary to use a trap or a valve of any kind on the return pipe?

Answer.—There will be no difficulty whatever in returning the condensation in the steam pipes to the boiler in either case, if a sufficient grade is provided for allowing the water to run back freely. The pressure will be practically the same throughout the entire piping system, and inasmuch as the water is heavier than the steam it will fall to the bottom of the pipe, and flow read-

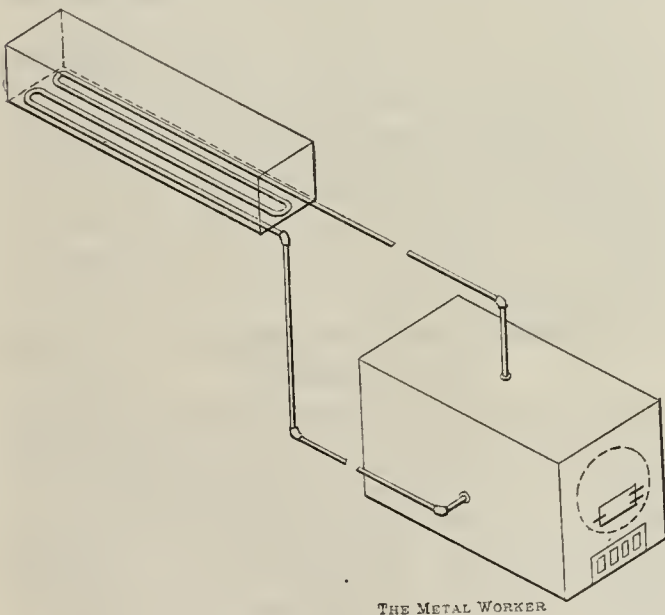


Fig. 2.—Coil in Vat.

ily in accordance with the grading of the pipes. The steam main from the boiler should be large enough to feed the piping in the evaporating chamber and the boiling vat under all conditions, and the piping should be arranged so that the steam can flow through it freely. It may be better to use a check valve on the return pipe, particularly the return from the boiling vat. If steam were turned in the heating coil in this vat when it was filled with cool cider, the steam might condense quickly and create a vacuum which would tend to lift the wa-

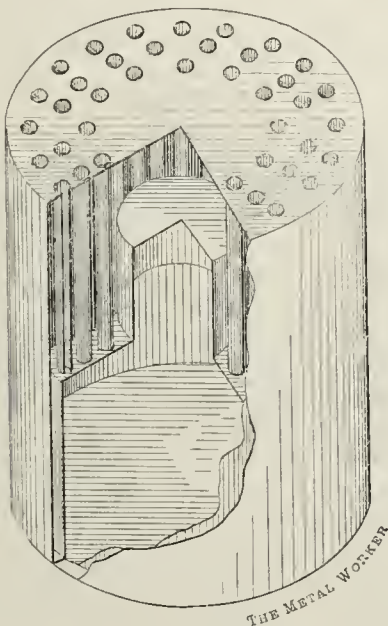
ter from the boiler through the return pipe. A check valve on the return pipe would overcome any such tendency.

HEATING MAINS IN OUTER WALLS.

From Experience, St. Paul, Minn.—Having worked in British Columbia and knowing something about the cold weather there, I would suggest to "Y. F.," who asks in *The Metal Worker* of December 21 as to the advisability of running a hot water riser up within an outside wall, that it would be a very risky piece of business. Of course the pipe might be well insulated with some kind of pipe covering, but as a rule pipes within an outside wall are brought directly into contact with it, so that the heat intended to be conveyed to registers is absorbed by the wall, greatly reducing the efficiency of the system. Further, in case the fire should get down, the probability of a main freezing in an outside wall is very much greater than if it was run up within the inner wall, or inside of the building proper.

HOW SHALL BOILER BE RATED?

From J. S. J.—We present herewith a sketch of a steel boiler, which will be incased in brick, the idea being to have the flames pass up from the fire through the flues, then around to the front, where they will pass down and around the rear of the boiler and thence to the chimney. The dimensions of the boiler are as follows: The shell is 58 inches high and 51 inches in di-



How Shall Boiler Be Rated?

ameter, the fire pot is 46 inches in diameter, the crown sheet begins 28 inches above the grate, and there is a central combustion chamber above the crown sheet, which is 18 inches in diameter and 15 inches high. Surrounding this central combustion chamber there are 48 tubes 3 inches in diameter and 30 inches long. We would like to know how many feet of radiating surface this boiler will supply with steam at 3 pounds pressure, and also how many square feet of radiating surface the boiler will supply with hot water at a temperature of 185 degrees. We would also like to know the method of arriving at the conclusion.

Note.—There are different methods of rating a boiler. Some are by actual test and weighing the condensation of the steam generated in the boiler. A simpler method, and one quite generally used, is to calculate the amount of surface exposed in a boiler below the water line in square feet, and then to estimate that the boiler will carry from 6 to 10 or more feet of surface in the radiation for every square foot of surface it exposes. It will be easy to figure the heating surface, and, assuming that it is about 165 square feet and that each square foot of surface will carry 10 feet of radiation, the boiler should carry 1650 square feet of steam radiation at the pressure mentioned. The water heating capacity of boilers is estimated all the way from 50 per cent. additional surface to double the steam capacity. Assuming that this boiler would carry 75 per cent. additional, it will

readily be figured that it will carry about 2900 square feet of direct hot water radiation. It is probable that this method of arriving at the capacity of a boiler is sufficiently reliable for all ordinary purposes, inasmuch as the boiler is to be used for heating purposes and the manner of firing will vary considerably from what an expert engineer would consider the best practice. The chimneys to which hot water boilers are connected vary considerably in the strength of their draft, and this has a very important effect on the efficiency of the boiler, through the character of the fire that it is possible to maintain in connection with them.

LIFT PUMPS WITH LONG SUCTION PIPES.

From Suction Rod, Maine.—In answer to the inquiry of "C. R." in *The Metal Worker* of December 7, and in comment on the contribution of "T. B." in *The Metal Worker* of December 14, I would remark that "T. B." has said nothing about friction in the 100 feet of 1¼-inch pipe connected with the pump in question. I find this a source of trouble in my territory. In many instances a man who wants a pump goes to a hardware dealer, who never set a pump or repaired one, and who knows nothing about pumps except that he has them for sale, as well as the pipe needed in connection with them. If his customer wants 200 feet of 1-inch pipe and a pump the hardwareman is eager to sell him and he will let the customer do the worrying. I also find a great many tinsmiths who do not understand the setting and repairing of pumps. If I had a pump to set that needed 100 feet of suction pipe, with a lift of 10 to 25 feet, I would use, if my customer would stand it, 1¾-inch lead pipe, certainly not less than 1½-inch iron pipe. I have a case in mind where a man has 200 feet of 1¼-inch pipe attached to a No. 3 pitcher pump. This man wishes to know what the trouble is when he can only get a small amount of water. In regard to check valves on such work, I can see no use for any valves, except the one in the pump, unless, on long distance work, a foot valve is placed at the bottom so as to have less water to draw to fill the pipes in case the pump was repaired, for when one valve is open all are open. Any job, if it has a large pipe which is perfectly tight, will give good results without any extra valves or air chambers. I always use lead pipe when I can, as there are less joints to contend with. I also use 1¾-inch lead pipe, which I cannot get in wrought iron. If "C. R." will use 1¾-inch lead pipe he will get a satisfactory result. I hope he will give the results of his experience, with a description of his piping system in whatever way he may arrange it.

LARGER HOT AIR PIPES.

From M. Y., Maine.—I feel sure that many hot air furnace men do not use large enough hot air pipes, and that if all the hot air pipes on a job were equalized the 12-inch pipe would give better results than the 10-inch pipe, which is so generally used. The use of larger pipes would furnish a larger quantity of warm air in the buildings, and it would not be necessary to run the furnace so hard; consequently there would be an increase in the durability of the furnace and a substantial reduction in the quantity of fuel consumed.

MAKING SHEET METAL BOATS.

From G. I. P., Battle Creek, Mich.—Will *The Metal Worker* please explain how to lay out the pattern for constructing a boat 14 feet long and 4 feet beam, of the regular life boat model, to be put together in narrow strips, or as wide as can be formed consistently with the desired shape?

Answer.—In the construction of boats from wood the shape is molded by the placing of the ribs, especially when boats are small in size. The covering of the ribs is then fitted by the "cut and try method," endeavoring as far as possible to have the top edge of the strips, when placed in position, on a straight line, whatever the shape may be that is necessary to accomplish it. The same method can be adopted in constructing boats of sheet

metal. Suggestions along these lines were presented in articles in *The Metal Worker* of July 22 and August 18, 1889, and May 25, 1901. It is quite probable that a study of the articles referred to will enable our correspondent to construct this boat. Some benefit may be derived and assistance gained from a conversation with some builder of wood boats.

ADULTERATION OF SHEET COPPER.

From B. H. B., Castleton, Ill.—We had a strange experience with one lot of sheet copper, which perhaps some of your readers can explain. An order was received by us to line wooden boxes for holding graphite, and for this purpose we used 14-ounce tinned copper. The job proved satisfactory, and later we received another order to line more boxes for the same purpose. This time 12-ounce untinned copper was used, and the results were satisfactory to our customers. When the third order was received we thought that if 12-ounce copper had answered the purpose, perhaps 10-ounce would do as well, and leave us a larger margin of profit. In a comparatively short time after the job was delivered complaints were made that something was wrong, and upon investigation we found that the copper was eaten through in many places and had a rotten appearance. We sent a sample of the damaged copper to the wholesaler from whom it was purchased, and he, in turn, forwarded it to the manufacturers from whom it was bought.

The report came back that the indications were that the copper had been subjected to severe heat, and that no copper would stand abuse of that kind. We wrote that as the copper was used as a lining for wooden boxes we could not see why the boxes had not burned, and asked the manufacturer to guess again. The matter was then turned over to the manufacturer's chemist, who reported that while he had not analyzed the copper, to him it had the appearance of being adulterated. The result of the complaint was the replacing of the copper by the manufacturer. This we used for lining some more boxes for the same purpose, with good results. While the possible adulteration of copper was a new idea to us, it may not be to some of your readers.

Answer.—Sheet copper is not always pure. There are at least two or three grades of ingot copper on the market; the poorer grades being more or less adulterated with iron or other metals, which are found very difficult of elimination by the smelting process. Manufacturers take advantage of prices for profit, and sometimes may make mistakes in mixtures from open market ingot supply and thereby put out a bad batch of sheets. There is also a possibility that the graphite packed in the boxes in question had been treated with acid for the removal of free iron and had not been thoroughly washed, which would quickly affect the 10-ounce copper. A mistake at the graphite works may have been at the bottom of the trouble, for pure graphite should have no action upon copper of any quality.

GALVANIZED IRON ROOFING ON THE SEA COAST.

From Cortright Metal Roofing Company, Philadelphia, Pa.—Referring to the article on "Galvanized Iron Roofing on the Sea Coast," which appeared in *The Metal Worker* on December 14, we would say that if "Roofers, Atlantic Sea Coast," will send us his name and address, we will furnish him with information concerning a system of roofing which is especially adapted for the work he is inquiring about.

WHERE SHOULD CHURCH FURNACE BE LOCATED?

From M. Y., Maine.—I would like to have the opinion of some of the furnace readers of *The Metal Worker* as to where a hot air furnace should be placed in the basement of a church, when a direct pipe is carried from the top of the furnace to the register in the church floor. I am uncertain as to the point of location of such a furnace and would like to hear from others. Will it really make any great difference where the furnace is placed, provided it is a first-class furnace and of ample size?

TRADE REPORT.

MARKET SUMMARY.

Pig Tin declined 1c., but closed firmer.

Copper is dull and weak.

Pig Lead is very quiet at the lower prices named last week.

Spelter is dull and unchanged.

Antimony is without change.

Nickel continues firm and unchanged.

Aluminum is active at former prices.

Tin Plates are quiet, and without feature of interest.

Sheets are still in large demand, with no change in prices.

Sheet Copper is unchanged in price and very quiet.

Foundry Pig Iron is being bought heavily, and prices are very strong, with upward tendency.

Old Metals are dull, Scrap Brass and Copper being specially quiet at lower prices.

Hardware is more quiet, but firm prices are noted.

Eave Trough and Conductor Pipe are 10 per cent. lower in price.

Plumbers' Brass Work prices are unchanged so far, notwithstanding the decline in Copper.

Soldering Nipples are the subject of a new price-list just issued.

Lead Pipe prices have been reaffirmed.

Wrought Iron Pipe is unchanged in price and in good demand.

Copper and Brass Goods are still quoted at former figures, but lower prices are looked for.

Shot has been reduced in price.

Wire Nails are irregular and rather lower in price.

Cut Nail prices have been reaffirmed.

Window Glass is irregular in price, with uncertain outlook as to the future.

White Lead has been reduced in price $\frac{1}{4}$ c.

Linseed Oil is 2c. a gallon higher.

Spirits Turpentine is firm and higher.

METAL MARKET.

NEW YORK, December 26, 1901.

Pig Tin.—A further decline in the Pig Tin market occurred in the early part of the week, but a turn for the better in the London market stiffened prices here before the close. Very little trading for either consumptive or speculative account was done. Jobbers' prices for Straits Pig in small lots were quoted at $24\frac{1}{4}$ c. to $24\frac{3}{4}$ c. per lb.

Copper.—The Copper market has remained dull and unsettled, and although no further reductions in price were made, the announcement of still lower prices was momentarily expected by the trade. It is rumored that further reductions are likely to be made at any time. The market is thoroughly unsettled, and no one can foretell what will happen. As a consequence transactions were extremely light. Prices are largely nominal, but Lake Ingot is said to have been sold in a retail way at 14c. to $14\frac{1}{2}$ c. per lb., and Casting Copper at $13\frac{3}{4}$ c. to 14c. Exports of Copper thus far this month have amounted to 5632 tons, which is small. Imports during the same period foot up to 2622 tons.

Sheet Copper.—No change in the price of Sheet Copper has yet been announced, but there is little doubt that the sharp break in the price of Raw Copper will be followed before long by a reduction in the price of the manufactured article. Consumers, being satisfied that lower prices are imminent, have been buying very sparingly, and the manufacturers, while quoting for spot delivery

at former figures, are advising their customers against placing orders for future deliveries at present quotations.

Pig Lead.—If the cut in prices made last week was calculated to increase interest in buying, it has failed completely. Very much the same feeling is prevalent now among consumers of Lead as the Copper consumers have shown for some time. The former are more cautious than ever, what faith they had in the stability of prices having been so severely shaken that they purchase only according to their absolute and immediate needs. Business has been exceedingly dull. Jobbers quote small lots of American Pig at 4.45c. to $4\frac{1}{2}$ c. per lb.

Spelter.—The recent developments in other metals have caused a quite natural degree of caution among consumers of Spelter, who are buying merely to fill their current needs. Business in this metal has been considerably lighter during the week under review. Meanwhile prices are unchanged, and without any indication of a decline in the near future, as stocks are very light, and consumers are understood not to have covered their wants very far ahead. Good Western brands, in small lots, are quoted by jobbers at $4\frac{1}{2}$ c. to $4\frac{3}{4}$ c. per lb.

Sheet Zinc.—The demand for Sheet Zinc is of moderate proportions and prices are unchanged, jobbers quoting 600-lb. lots at $6\frac{1}{4}$ c. and smaller quantities at $7\frac{1}{4}$ c. per lb.

Antimony.—The market is unchanged and the demand is of fair proportions. Cookson's, in small parcels, is quoted at $10\frac{1}{2}$ c. to 11c. and Hallett's at $8\frac{1}{4}$ c. to $8\frac{3}{4}$ c. per lb.

Nickel.—Is unchanged, continuing on the basis of 60c. to 65c. per lb. for small lots.

Aluminum.—The manufacturers of Aluminum report a continued active and steady demand for this metal. Prices are without change. Small lots of No. 1 Ingot guaranteed 99 per cent. pure rule at 37c. per pound, and 100-lb. lots at 35c.

Tin Plates.—There is nothing fresh to be reported in connection with this market. Business is fair for the season, and prices are without change. The American Tin Plate Company are continuing to take orders for delivery in the first quarter of next year at the figures ruling for some time past. American Bessemer Coke Plates, IC, 14 x 20, in small lots, delivered at New York and corresponding points, rule at about \$5.25 to \$5.50 per box.

Sheets.—The market for Sheets, while still strong, with prices in general showing no decline from the level maintained for some weeks past, shows some slight indication of approaching softness, owing to the increased output, which is beginning to come into the market from the new independent Sheet mills that are starting operations. Some of these new mills are said to be anxious for orders and to be willing to make slight concessions in prices in order to obtain desirable contracts. However, there is still a very large demand for Both Black and Galvanized Sheets, and nearly all of the mills are comfortably filled up with orders for some little time to come. Deliveries are beginning to come in rather more freely to the local market, but available stocks of Sheets in jobbers' hands are still quite light. On some of the more popular sizes there continues to be a good deal of scarcity. Jobbers' prices are unchanged, No. 27 One Pass Cold Rolled Soft Steel Sheets being quoted at 4c. to 4.05c., and Galvanized Sheets at 65 to $67\frac{1}{2}$ per cent. off the list.

Chicago advices are as follows: New business is being offered to the mills, although they are still much in arrears and making deliveries on old contracts. Prices are well sustained. Mill shipments of No. 27 Black Sheets are held at 3.15c. to 3.40c., Chicago, and small lots from stock at 3.50c. to 3.70c. Small lots of Galvanized are maintained at 70 to 70 and $2\frac{1}{2}$.

Old Metals.—The market is quiet. Consumers of Scrap Iron are well supplied and are not buying to any extent, and other Scrap Metals are out of favor, owing to the slump in Copper and the weakness of Lead. Scrap Brass and Copper are considerably lower. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 11 c.
Light and Tinned Copper.....	per lb. 9½c.
Heavy Brass.....	per lb. 8 c.
Light Brass.....	per lb. 6½c.
Lead.....	per lb. 3¾c.
Tea Lead.....	per lb. 3¼c.
Zinc.....	per lb. 2¾c.
No. 1 Pewter.....	per lb. 16½c.
No. 2 Pewter.....	per lb. 9 c.
Tin Plate Scrap, per gross ton.....	\$6.00 to \$6.50
Wrought Iron Scrap, per gross ton.....	10.50 to 11.00
Heavy Cast Scrap, per gross ton.....	10.25 to 10.50
Stove Plate Scrap, per gross ton.....	8.00 to 8.25
Burnt Iron, per gross ton.....	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—With possibly one or two exceptions all the larger consumers in this district are now pretty well covered for the first three to six months of next year. Among the transactions closed this week was a round lot for a Connecticut foundry. The market is steady. We quote: No. 1, \$16.35 to \$17.50; No. 2 X, \$15.75 to \$16; No. 2 Plain, \$15.25 to \$16; Tennessee and Alabama brands, No. 1 Foundry, \$16; No. 2 Foundry, \$15.25; No. 1 Soft, \$16; No. 2 Soft, \$15.25; No. 3 Foundry, \$14.75; No. 4 Foundry, \$14.25.

CHICAGO.—The sales of the week have principally consisted of Southern Foundry Iron. These include one 3000-ton contract, several 1000-ton lots and quite a number of orders of 500 tons. More of the Southern furnace companies are advancing their prices. It is expected that the market will shortly show a general advance of at least 50c. Stocks at Southern furnaces are getting down to a very low point. Trouble is constantly experienced in securing deliveries from the South because of the shortage of cars. The local situation is particularly strong. The scarcity of Coke has caused two more furnaces producing Foundry Iron to be banked and danger is imminent that more will have to suspend operations if the supply does not improve. Inquiries are numerous, indicating a continuance of the buying movement. We quote as follows:

Lake Superior Charcoal.....	\$18.50 to \$19.25
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	17.60 to 17.85
Southern Silvery, according to Silcon.....	16.15 to 16.40
Southern Coke, No. 1.....	15.65 to 16.15
Southern Coke, No. 2.....	15.15 to 15.65
Southern Coke, No. 3.....	14.65 to 15.15
Southern Coke, No. 1 Soft.....	15.65 to 16.15
Southern Coke, No. 2 Soft.....	15.15 to 15.65

PHILADELPHIA.—There is no relief from the scarcity which has been felt for a month past, and in fact in some lines it is greater than ever. Foundry Irons can be picked up here and there, but the supply for quick delivery is too restricted to meet all requirements. For the first three or six months of the coming year prices are nominally unchanged. Makers deprecate any premature advance, but they are not pushing business, although from regular customers they accept moderate lines of business at about the same prices as have been quoted for two or three weeks past, but the disposition is very conservative, and both sides wait the trend of events before making very heavy commitments. The general impression is that present quotations will continue until well into January, but there is no doubt that a very optimistic feeling prevails. Prices are more or less nominal, but the extreme figures both ways would be about as follows for Philadelphia and nearby points: No. 1 X Foundry, \$16.25 to \$16.50; No. 2 X Foundry, \$15.75 to \$16.25; No. 2 Plain, \$15.35 to \$15.65.

PITTSBURGH.—The car situation is getting worse. At the present time eight or ten furnaces in the Mahoning and Shenango valleys are banked for want of Coke, and it is likely that some stacks will have to blow out. Foundry Iron is very scarce. Furnaces are piling Iron in some cases for want of cars and the situation is critical. We quote No. 2 Foundry at \$16 to \$16.25 and No. 1 Foundry at \$16.50 to \$16.75, f.o.b. cars Pittsburgh.

CINCINNATI.—There has been some very good selling all along the line in the Pig Iron market. When the season is considered the buying may be called heavy. A number of contracts are reported for deliveries extending to December, 1902. In spite of the fact that a number of furnaces declare themselves out of the market at the present prices, the quotation sheet remains unchanged. This is owing to the attitude of the large Southern interests in refusing to advance their figures. It is apparently safe to say that the market is well under the control of a well balanced conservatism. A fair trade is looked for throughout the next week. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.25
Southern Coke, No. 3.....	to 13.75
Southern Coke, No. 4.....	to 13.25
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.25
Southern Coke, Gray Forge.....	to 13.25
Southern Coke, Mottled.....	to 13.25
Ohio Silvery, No. 1.....	\$15.60 to 16.10
Ohio Silvery, No. 2.....	15.10 to 15.60
Lake Superior Coke, No. 1.....	to 16.60
Lake Superior Coke, No. 2.....	to 16.10
Lake Superior Coke, No. 3.....	to 15.60

CHICAGO REPORT.

Scrap Iron and Steel.—Trade is light. Cast Scrap is firm, but other classes of material are inclined to weakness. We quote dealers' buying prices for carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$11.00 to \$11.50
Machinery Cast.....	10.50 to 11.00
Malleable Cast.....	10.00 to 11.00
Stove Plate (free from burnt).....	8.00 to 8.50
Burnt Iron and Grate Bars.....	5.50 to 6.00
Sheet Iron and Hoops.....	6.00 to 7.00
Plow Steel.....	to 10.00
Breaking Stock.....	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c.....	to 7.00
Old Boilers—whole (Iron).....	6.50 to 7.00
Old Rollers (Iron) cut in single Sheets and Rugs.....	10.00 to 11.00
Old Gas Pipe and Boiler Tubes.....	10.50 to 11.00
Cast Borings.....	4.50 to 5.00
Turnings.....	9.50 to 10.00
Horseshoes.....	12.00 to

Old Metals.—Business is demoralized by the great decline in Ingot Copper. Nothing is doing. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy.....	10 c.
Copper Bottoms.....	9 c.
Copper Clips.....	10 c.
Red Brass.....	10 c.
Yellow Brass.....	7½c.
Red Brass Borings.....	9 c.
Yellow Brass Borings.....	6½c.
Light Brass.....	6½c.
Pipe Lead.....	3.55c.
Tea Lead.....	3 c.
Zinc.....	3 c.
Tin Foil.....	21 c.
Pewter, No. 1.....	16 c.
Pewter, No. 2.....	14 c.

Old Rubber.—Dullness still prevails. We quote as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	....
Air Brake Hose.....	46.00	....
Rubber Shoes.....	....	7 c.
Rubber Car Springs.....	....	5½c.
Inside Bicycle Tubing.....	....	22 c.
Outside Tubing.....	....	6¾c.
Black Rubber.....	....	4¼c.
White Rubber.....	....	8¼c.

Rags.—Dealers quote buying prices of good Country Mixed Rags, Chicago delivery, at 75c. to 85c. per 100 lbs. in any quantity.

Anthracite Coal.—The supply is somewhat better, as railroads are beginning to get enough cars to make fairly satisfactory deliveries. Trade keeps up very well. Prices are unchanged, as follows:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

The excellent condition of the business interests of Chicago is forcibly demonstrated by the experience of one of the largest owners of manufacturing and warehouse property in the city. He says that in 12 years' experience he has never seen such an enormous demand for manufacturing or warehouse facilities, having numerous inquiries for space which cannot be considered. He finds many parties seeking capitalists willing to construct buildings for their use on a percentage basis.

THE HARDWARE TRADE.

In both mercantile and manufacturing establishments the presence of the holiday season is emphasized in various ways. Manufacturers find a marked falling off in the immediate demands for goods, as the requirements of the trade for the year are presumably covered, and merchants are refraining from buying unnecessarily just before the annual inventory. With the exception of a few belated rush orders for holiday goods the business which is coming to the manufacturers is for the most part for next season, but even this class of buying is limited, and the volume of current business accordingly shows considerable falling off. Few manufacturers, however, regret this. Many of them have only broken stocks in their warehouses, and not a few are seriously behind their orders. An opportunity to get in shape for spring trade is therefore not unwelcome. With local merchants, especially those who go into the finer goods and the lines which receive attention from holiday shoppers, the present season is one of unusual stir and activity, and many report an exceedingly satisfactory business of a type which is more than usually profitable. In anticipation of the passing of the holiday rush, preparations for the annual stock taking are being made, which will show in black and white the results of the year's effort.

There is little general change in the tone of the market, so far as prices are concerned. The break in copper will probably have some effect on goods of which this metal is the material, but the market has not as yet taken its proper level, as the trade are waiting to see where the prices of ingot copper will settle. The break is not unwelcome to the trade, as a whole, who have long looked upon it as inevitable, the natural result of an attempt to keep prices at an unreasonable height. The strength of the iron market is a feature of prime importance in the situation. This tends to give firmness to Hardware lines in general. In a few products, owing to exceptional circumstances, there is some weakness, and there is no doubt that some lines which have been scarce will be in better supply. The year, however, draws to a close with very satisfactory conditions, and with much promise for the new year, in the prosperity of which we trust the readers of *The Metal Worker* will have a liberal share.

NOTES ON PRICES.

Plumbers' Brass Work.—The executive officers of the Manufacturers' Association of Plumbers' Brass Goods are said to be making strenuous efforts to hold the prices of their goods at the level agreed on at the last meeting held in Pittsburgh on December 10. The unsettled condition of the Copper market has created an uneasy feeling in the trade, and the officers of the association are afraid that some of their members may become panic stricken and rush into the market with prices much below the combination quotations. The officers are said to be doing everything possible to avert this. So far, their efforts have met with success; due probably to the fact that nearly all the manufacturers are running their factories with Copper bought at 17 cents per pound. It is hoped that the association may be held firmly together until the Copper market has reached a stable base, at which time a meeting will be held and new prices, based upon the new conditions and costs, will be announced. Meanwhile it is understood that the present prices will be maintained, and the members of the association will refrain from sending out prices unless they are asked for, and the inquiry is accompanied with a specification of the goods wanted.

Soldering Nipples.—At the meeting of the Association of Brass Manufacturers, held in Pittsburgh on December 10, the following new list prices were adopted on Soldering Nipples—Male and Female:

Size.	1/2-inch.	3/4-inch.	2 1/2-inch.	3-inch.	4-inch.
Per dozen.	\$3.00	\$4.00	\$28.00	\$40.00	\$72.00

It will be noticed that these are the sizes most in demand and upon which, it is said, there was the least profit to the manufacturers.

Lead Pipe.—The Eastern Lead Pipe Association held a meeting in New York on Friday, December 20, and reaffirmed the price then in effect. The price is 6 3/4 cents per pound, subject to a discount of 20 per cent. to the trade. It is understood that no change in the price of Lead Pipe is contemplated at the present time.

Wrought Iron Pipe.—There is no change in either the cost or conditions of sale of Wrought Iron Pipe, Black and Galvanized. The demand is normal and shipments are being made with a promptness not known for the past year or more.

Copper and Brass Manufactures.—The price of manufactured Copper and Brass products remains unchanged from last week's reports, with the exception of Wire, both bare and insulated, which, not being controlled by an association, now has followed the decline in ingot Copper, Bare Wire being 14 cents per pound, base, with the usual difference for Insulated. Copper and Brass Sheets, Tubes, Rods, Rivets, &c., are still at former figures, although dealers and manufacturers frankly advise their customers to defer purchases, except urgent ones, until after January 1, when it is expected something more definite will develop, or they are executing orders to be billed after the opening of the new year at reductions, or advances, as the case may be.

Shot.—Under date December 17 the manufacturers of Shot announced a material reduction in prices, owing to the changes which have taken place in the cost of raw material. The new prices are as follows, terms net cash 30 days, or 2 per cent. discount for cash in 10 days: Drop Shot, sizes smaller than B, per 25-pound bag. . \$1.35 Drop Shot, B and larger sizes, per 25-pound bag. . . 1.60 Buck and Chilled Shot, per 25-pound bag. 1.60 Dust Shot, per 25-pound bag. 2.00 Freight is equalized with other Shot manufacturing points. On orders for ton lots and upward an abatement of 10 cents per bag of 25 pounds, or 40 cents per 100 pounds, is made.

Maple Sugar Goods.—Chas. Millar & Son Company, Utica, N. Y., make the following quotations on their line of Maple Sugar Goods. The Sap Spouts are subject to the discounts given, the prices on the other goods being net:

<i>Ideal Sap Spout.</i>	
No. 1, Tinned, Open Top, per 100.	\$1.50
No. 1, Tinned, Closed Top, per 100.	1.50
Discounts { Open	25 %
{ Closed	20 %
Terms, cash 60 days from March 1.	

<i>Todd's Patent Cover for Sap Buckets.</i>	
Each	6 cents
In crates of 150, per crate.	\$6.00

<i>Sap Buckets.</i>			
Size.	IC.	IX.	Galv.
12-quart, per 100.	\$13.00	\$15.00	\$17.00
15-quart, per 100.	15.00	17.50	19.50
F.o.b. Utica.			

<i>Sap Pails.</i>			
Size.	IC.	IX.	Galv.
12-quart, per 100.	\$15.75	\$18.00	\$19.50
15-quart, per 100.	18.00	20.25	22.50
F.o.b. Utica.			

<i>Syrup Cans.</i>	
Full gallon, square or round, paneled or plain, with handles, per 100.	\$8.25
1/2-gallon, square or round, paneled or plain, with handles, per 100.	6.75
F.o.b. Utica.	

Twenty-five cents per 100 reduction from list is allowed on Sap Buckets, Sap Pails and Syrup Cans when shipped from factory.

Eave Trough and Conductor Pipe.—A reduction of 10 per cent. has recently been made in the price of Eave Trough and Conductor Pipe.

Wire Nails.—The demand for Wire Nails from store keeps up fairly well, owing, in part, to the fact that local merchants are confining their purchases to small lots. The market does not gain strength, notwithstanding the continued high price of steel, and retail prices are rather lower than of late. Small lots of Wire Nails from store, New York, are quoted at \$2.25 to \$2.30 per keg.

Cut Nails.—At the monthly meeting of the Cut Nail manufacturers prices were reaffirmed for the month of January. On account of the high price of Steel it was not deemed advisable to make lower prices, especially as it was not considered probable that the demand for Nails would thus be increased. The market for Cut Nails in New York is without change. The demand is moderate. Representatives of mills are adhering to the price of \$2.25 for Nails from store. Jobbers are asking the same price generally, but in some instances are selling 2 cents below these figures.

Window Glass.—Reports are conflicting in regard to the probable future of the Glass market, which is dependent upon the position taken by the different combines. It is understood that the outside factories, both East and West, are perfecting arrangements to come in, either with the American Window Glass Company or the Co-operative Federation. It is not yet known whether the Independent Glass Company and the American Window Glass Company will renew their agreement in January or not. If an amicable arrangement can be reached between the three combines it is expected an advance will be made in prices. But if no agreement is reached indications point to lower prices.

White Lead.—Under date of December 20 manufacturers of White Lead, dry and in oil, Red Lead, &c., reduced prices ½ cent a pound. The reduction has been foreshadowed by irregularities in prices, which have been caused by the declining of Pig Lead in foreign markets. The future of the market will probably depend upon the price of the raw material. White Lead in Oil, in a retail way, is quoted at 6½ to 6¾ cents per pound.

Linseed Oil.—The Linseed Oil market hardened under the influence of higher prices for Seed and inquiries for future deliveries. City crushers advanced prices this week 2 cents per gallon. Raw Linseed Oil in small lots is now quoted at 56 to 57 cents.

Spirits Turpentine.—The market for Turpentine is firm at this point and demand moderate. The strength of the market is attributed to reports from Savannah, which indicate an active export demand. Local quotations on small lots are 40 to 40½ cents per gallon.

Cape Cod Commercial Travelers' Association, George E. Hunt, president, will hold their annual banquet and ladies' night at the Parker House, Boston, Friday evening, January 10, 1902. Many of the members of this association are connected with lines represented by *The Metal Worker*, and their annual banquets are always enjoyable occasions. The programme for January 10 includes a business meeting at 2 o'clock in the afternoon and a reception to guests and ex-presidents of the association at 6.30 p.m., and the banquet will be served at 7 o'clock, and several prominent men are expected to make addresses. A fine musical programme also will be provided. President Hunt, in his announcement of the banquet, says: "The past year has been one of prosperity. Our association has made a gain in membership, and has increased its funds in the treasury. As we have made gains in all branches, it is my desire to have a gain of members at the annual meeting and banquet. This will be our fifteenth annual gathering. Let us make it one long to be remembered."

A new record for the erection of the structural steel skeleton of a modern skyscraper has been established by the Thompson-Starrett Company, builders, of New York, at the building corner of Cedar and William streets, almost in the heart of New York's financial center. The structure, 15 stories in height, covers a plot 60 x 130 feet, and on November 9 the task of demolishing the old building which occupied the site was completed. Upon December 4, or in exactly 25 days, including Sundays, the enormous task of erection was completed, and it is stated by the contractors that the building will be ready for occupancy by February 15. The steel was furnished by the American Bridge Company and fabricated in their Trenton branch. Shop details for the work were furnished over a period of four weeks, commencing Sep-

tember 8, and the building was shipped complete in a trifle over nine weeks after receipt of the details.

The Postal Department at Washington has decided that all mail matter is mailable to Porto Rico in the same manner as to any part of the United States. A large amount of merchandise addressed to people in Porto Rico has been held up by the New York Post Office, and a large quantity of it sent to the Dead Letter Office at Washington pending instructions. The postmaster at New York has been notified to forward this mail according to the recent decision.

The imports of merchandise into the United States in the 11 months ended November 30 show an increase of \$39,972,100 over those for the corresponding period of last year, while the exports show a loss of \$3,562,871. The value of the imports for the months mentioned was \$800,424,607 and of the exports \$1,328,493,371, and the balance of trade in favor of the United States in that period was \$528,068,764.

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ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED DECEMBER 27, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.	\$ 37¢
Small lots.	\$ 35¢
100-lb lots.	\$ 35¢
Aluminum Sheet, B. & S. gauge.	
In lots of 50 lbs or more.	
Wider than 8-in.	14-in.
And including.	24-in.
	30-in.
	\$ 42¢
	\$ 44¢
	\$ 47¢
	\$ 48¢
	\$ 49¢
	\$ 50¢
	\$ 51¢
	\$ 52¢
	\$ 53¢
	\$ 54¢
	\$ 55¢
	\$ 56¢
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	\$ 83¢
	\$ 84¢
	\$ 85¢
	\$ 86¢
	\$ 87¢
	\$ 88¢
	\$ 89¢
	\$ 90¢
	\$ 91¢
	\$ 92¢
	\$ 93¢
	\$ 94¢
	\$ 95¢
	\$ 96¢
	\$ 97¢
	\$ 98¢
	\$ 99¢
	\$ 1.00

Antimony—

Cookson.	\$ 10¢
Halsett's.	\$ 8¢
U. S.	\$ 8¢

Brass, Roll and Sheet..15¢20¢

Conductors—

Corrugated.

Galvanized 1/2 or more.	Not Stained.	70¢5¢
"	Not Stained.	70¢2¢
"	Plain Round, 1/2 or more.	70¢5¢
"	Not Stained.	70¢2¢
"	Galvanized, Plain Round, Not Stained.	70¢2¢

Spiral Riveted.

Galvanized	40%
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.	

Conductor Strainers—

See Strainers, Conductor.

Copper—

Lake Ingot.	14	14¢
Casting.	13 1/2	14¢
Sheet and Bolt.	21¢	14¢
Cold Rolled Sheets.	22¢	14¢
Cold Rolled and Polished Sheets.	23¢	14¢
Planished Sheets.	24¢	14¢
Bottoms, Pits and Flats.	25¢	14¢

Eave Trough, Galvanized

Territory.	L. C. L.	
Eastern.	75¢10%	Carloads
Central.	75¢7 1/2%	extra
Southern.	70¢12 1/2%	12%
S. Western.	70¢10%	
Terms, 2% for cash.		

Eave Trough Mitres—

Lap or Slip Joint.11st, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.	30%
Galvanized.	30%
Perfect Elbows.	40%

Stove Pipe—

Four-Piece

No. 1.	80	85	90	1.00	1.05	per doz.
No. 2.	65	70	75	80	85	"
No. 3.	60	65	70	75	80	"

Elbows and Shoes—

Galvanized.80%

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R.	R. G.
Soft Steel.	Cleaned.
Nos. 14 to 16.	\$ 3.85
Nos. 18 to 21.	\$ 3.75
Nos. 22 to 24.	\$ 3.85
Nos. 25 and 26.	\$ 3.95
No. 27.	\$ 4.05
No. 28.	\$ 4.15

Russia, Planished. &c.

Genuine Russia, accord-	\$ 11¢14¢
ing to assortment.	\$ 10¢14¢
Do. Stained.	\$ 11¢14¢
Patent Planished. #1 A, 12¢; B, 11¢ net	

Galvanized.

Nos. 10 to 16.	\$ 12¢
Nos. 17 to 21.	\$ 13¢
Nos. 22 to 24.	\$ 14¢
Nos. 25 to 26.	\$ 15¢
No. 27.	\$ 16¢
No. 28.	\$ 17¢
No. 29.	\$ 18¢
No. 30.	\$ 19¢
36 in. 1¢ #1 higher.	

Lead—

American Pig.	4.45¢4 1/2¢
Bar.	5.00¢
Pipe.	6.00¢
Tin Line Pipe.	12¢
Block Tin Pipe.	37¢
Sheet Lead, full rolls.	7 1/2¢
Sheet Lead, cut.	7 1/2¢
Old Lead in exchange.	4¢ #1 D.

Mitres, Eave Trough—

See Eave Trough Mitres.

Nickel—

Per lb.	80¢85¢
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Paints, Oils, &c.—

Leads—

Lead, American White, in Oil:	
Lots of 500 lb or over.	8 1/2¢
Lots less than 500 lb.	8 1/2¢
Lead, White, in oil, 25 lb tin	
pails, add to keg price.	1¢
Lead, White, in oil, 13 1/2 lb tin	
pails, add to keg price.	1¢
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.	1 1/2¢
Lead, White, Dry in bbls.	5 1/2¢
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.	8¢
Lots less than 500 lb.	8 1/2¢

Oils—

Linseed, City, raw.	58¢57¢
Linseed, City, boiled.	54¢59¢
Linseed State and West'n, raw.	54¢55¢

Spirits Turpentine—

In Southern bbls.	38 1/2¢39¢
In machine bbls.	40¢40 1/2¢

Putty—

In bulk.	\$1.25
In bladders.	2.25
In cans 12 lb to 25 lb.	2.25
In cans 1 lb to 5 lb.	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.	12 1/2¢13¢
Kerosene.	13¢13 1/2¢

Pipe, Drain

See Conductors.

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.	60¢10¢60¢10¢5¢
White Japanned.	60¢10¢60¢10¢5¢
Nickel Plated.	60¢10¢60¢10¢5¢
Bronze Finishes in Imitation of Gold,	
Silver, Copper or Bronze.	60¢10¢60¢10¢5¢
Electroplated in Brass, Bronze or	
Copper.	60¢10¢60¢10¢5¢
White Porcelain.	80¢
Solid Brass and Bronze Metal.	50¢

Roofing Material—

1 Ply Tarred Paper.	ton, \$28.00@38.00
2 Ply Tarred Paper.	roll, 108 sq. ft.
	45¢50¢
3 Ply Tarred Paper.	roll, 108 sq. ft.
	65¢75¢
Slater's Felt.	roll 500 sq. ft., 50¢60¢
Roofing Pitch.	bbl. \$3.38

Rosin—

Common and Good—Strained.	
Rosin, C. & D.	bbl. \$1.50 @ \$1.55
Rosin, E. & F.	bbl. 1.60 @ 1.05
Rosin, G. & H.	bbl. 1.70 @ 1.75
Rosin, I. & K.	bbl. 1.80 @ 2.40
Rosin, M. & N.	bbl. 2.90 @ 3.50

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

According to size.

Pennsylvania:

Best Bangor.	sq. \$3.25@ \$4.50
No. 1 Bangor Ribbon.	sq. 3.00@ 3.50
Pen Argyle.	sq. 3.00@ 3.75
Peach Bottom.	sq. 4.65@ 5.80
No. 1 Boys.	sq. 3.35@ 3.55
No. 1 Chapman Keystone.	
sq.	3.25@ 4.25

Vermont:

Sea Green.	sq. \$2.00@ \$3.15
Purple.	sq. 3.75@ 4.25
Unfading Green.	sq. 3.25@ 4.50
Red.	sq. 6.50@ 11.00

Maine:

Brownville, Unfading Black:	
No. 1 quality.	\$5.25@7.50
No. 2 quality.	\$4.25@6.00

Solder—

1/2 lb guaranteed.17¢17 1/2¢

No. 1.14 1/2¢16¢

Prices of Solder indicated by private

brands vary according to composition.

Soldering Fluids—

Per Pound.

Smaller

Barrels Q'tities

Concentrated Flux.4c

Eureka Flux:

Triple Strength.3c

Extra Concentrated.4 1/2c

Crystal.2c

Gedney's Fluid.2c

Lennox Fluid.2c

Perfection Flux.3c

Yager's Salts, 1 lb. bottles.each, 50¢

5 lb. bottles, per lb., 45¢

Soldering Coppers—

Per lb.22¢24¢

Spelter—

Western Spelter.45¢48¢

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.50%

Tin Pigs and Bars—

Banca, pigs. #1.24 1/2¢24 1/2¢

Straits, pigs. #1.24 1/2¢24 1/2¢

Straits, in bars. #1.25 1/2¢25 1/2¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is

double the price of 14 x 20.

Calland Grade:

IC, 14 x 20.\$7.50

IX, 14 x 20.9.00

IXX, 14 x 20.10.25

IXXX, 14 x 20.11.50

IXXXX, 14 x 20.12.75

Melyn Grade:

IC, 14 x 20.7.00

IX, 14 x 20.8.50

IXX, 14 x 20.9.75

IXXX, 14 x 20.11.00

IXXXX, 14 x 20.12.25

Allaway Grade:

IC, 14 x 20.6.50

IX, 14 x 20.7.80

IXX, 14 x 20.8.70

IXXX, 14 x 20.9.80

IXXXX, 14 x 20.10.90

Coke Plates, Bright—

Bessemer

Steel, or

equal to J. B. Grade,

full weight

IX, 14 x 20.\$6.25@6.50

N. B.—The reduction per box on lighter

plates than IC, 14 x 20, is as follows:

100 lb.15¢

95 lb.20¢

90 lb.25¢

85 lb.30¢

Terne Plates—

N. B.—The following prices are for IC

20 x 28, the rate for 14 x 20 being half as

much. IX is usually held at \$2 per box

advance for 8 to 10 lb coating and \$2.50

to \$3 advance for 15 lb and upward.

About 40 lb coating.\$16.50@17.00

About 30 lb coating.15.75@16.25

About 20 lb coating.13.75@14.25

About 15 lb coating.11.75@12.25

About 8 lb coating.10.50

Boiler Plates, American—

IXX, 14 x 28. (112 sheets).\$12.50

IXX, 14 x 28. (112 sheets).13.50

IXX, 14 x 31. (112 sheets).15.00

Troughs, Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.\$15.00

Steel Lock Frame, per doz.18.00

Daisy Improved pattern, # doz.18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896. 30¢@35¢

Copper and Bronze, 8c per lb. list more

than Brass.

Seamless Brass Tubes, net list Feb. 6,

1899.

Tin.50%

Galvanized.50%

Fittings for do.40%

Zinc—

600 lb casks #1.8 1/2¢

Per lb.7 1/2¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:

30 gal.70¢10%

85 and 40 gal.70%

Other sizes up to 52 gal.80¢80¢10%

52 gal. and above.80%

Extra Heavy Boilers:

18 to 52 gal.80%

53 gal. and above.55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:

Basin Cocks.60%

Bath Cocks and Double Bath Cocks.65%

Bibs.65%

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STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals
PERFORATED AS REQUIRED for

Grain Cleaning and Mining Machinery, Woolen, Cotton, Paper and Pulp Mills, Rice, Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses, Stone, Coal and Ore Screens, Brick and Tile Works, Filters, Spark Arresters, Gas and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

Standard Sizes Perforated Tin and Brass Always in Stock.

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Eastern Office, 234 Pearl St., NEW YORK.

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Clayton & Lambert Mfg. Co., Detroit, Mich.

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Furnace Pipe and Fittings.

International Heater Co., Utica, N. Y.

Osborn, J. M. & L. A., Cleveland, O.

Furnaces and Heaters.

Amer. Furnace Co., St. Louis, Mo.

Barstow Stove Co., Providence, R. I.

Beckwith, P. D., Est. of, Dowagiac, Mich.

Bergstrom Bros. & Co., Neenah, Wis.

Bonnot Co., Canton, O.

Boynnton Furnace Co., 207 Water St., N. Y.

Brand Stove Co., Milwaukee, Wis.

Brien Heater Co., Hooisick Falls, N. Y.

Cory, Uzal & Co., 210 Water St., N. Y.

Dighton Furnace Co., Taunton, Mass.

Floyd, Wells & Co., Roversford, Pa.

Graft Furnace Co., 208 Water Street, New York.

Hart & Crouse Co., Utica, N. Y.

Howes, S. M. Co., Boston, Mass.

International Heater Co., Utica, N. Y.

Kelsey Furnace Co., Syracuse, N. Y.

Lennox Machine Co., Marshalltown, Iowa.

Maze Furnace Co., Boston, Mass.

Mueller, L. J. Furnace Co., Milwaukee, Wis.

Richmond Stove Co., Norwich, Conn.

Schwah, R. J. & Sons Co., Milwaukee, Wis.

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Stamford Foundry Co., Stamford, Ct.

Stanton Heater Co., Martins Ferry, O.

Tubular Heating and Ventilating Co., Phila., Pa.

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Hoffman, Geo. W., Indianapolis, Ind.
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Gobelle Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

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Cheney, S. & Son, Manlius, N. Y.
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Clark, Henry N. Co., Boston, Mass.
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Fanner Mfg. Co., Cleveland, O.
Troy Nickel Works, Troy, N. Y.

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Clad, V. & Sons, Philadelphia, Pa.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Kilpase Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
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Fuller & Warren Co., Troy, N. Y.
Graff Furnace Co., 208 Water Street, New York.
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Maze Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Quincy Fdry. & Novelty Co., Quincy, Ill.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Weir Stove Co., Taunton, Mass.

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Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
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Ringen Stove Co., St. Louis, Mo.

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Ringen Stove Co., St. Louis, Mo.

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Niagara Machine & Tool Wks., Buffalo, N. Y.
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Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
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American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummeys, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

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Vulcan Metal Refining Co., 157 Cedar St., N. Y.
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Littleford Bros., Cincinnati, O.
Marston, L. G. & Co., Boston, Mass.

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enamelling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

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THE METAL WORKER.

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Official letters of reference should not be enclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

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A first-class CORE MAKER for hot water boiler work; state capabilities and wages wanted; an extra wage for an extra good man. "Foundry," care *The Metal Worker*, New York. Dec. 28

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A good MOLDING FOREMAN for boiler work; must know how to keep down loss below ten per cent; good Eastern shop. "Molder," care *The Metal Worker*, New York. Dec. 28

A first-class PLUMBER, SHEET IRON WORKER and STEAM PIPER; steady work in factory, 58 hours per week; state experience and wages wanted. "Worcester County," care *The Metal Worker*, New York. Dec. 28

A man thoroughly posted on ROOFING, GUTTERS, VALLEYS, &c., on Queen Anne house; some knowledge of furnaces and ranges preferred; also young man with some experience at the trade; good jobs to the right parties. Daniel Almond, Bath Beach, L. I., N. Y. Dec. 28

A first-class PLUMBER and TINSMITH; no other need apply; state wages. John H. Newbury, Bay Shore, N. Y. Dec. 28

A first-class JOBBING TINSMITH at once. D. E. McNally & Co., 199 Union street, Worcester, Mass. Dec. 28

PLUMBER at once who can also do tin work in and out of shop; must be absolutely sober and reliable; steady job year around, no lost time; write at once, stating wages expected, to G. W. Van Dever & Son, Springfield Center, N. Y. Dec. 28

A WORKING FOREMAN to take charge of a tin and cornice shop; must be capable of detailing, cutting and constructing galvanized iron, cornice and skylights, tin roofing, job work and hot air heating; shop runs usually from six to eight men; state age and what wages wanted for steady work the year round; a Southern or Western man preferred; must be temperate. "Foreman, 123," care *The Metal Worker*, New York. Dec. 28

PLUMBER who can do tin work; must be temperate and steady; a good job the year round for a man who can do the work; state age, experience and wages wanted; references required. "H. G.," care *The Metal Worker*, New York. Dec. 28

An experienced SALESMAN for New England to sell a line of high grade hot air furnaces and steam and hot water boilers; only first-class men with experience in this territory need apply. "Carbon," care *The Metal Worker*, New York. Dec. 21

A first-class STOVE PATTERN FITTER. Moser, Wehrle & Co., Newark, Ohio. Dec. 21

A first-class CORNICE WORKER; one who is capable of getting his own patterns and erecting the work; steady job to the right man. Jno. H. Smith & Sons, 57 Terrace, Buffalo, N. Y. Dec. 21

FOUNDRY SUPERINTENDENT who is capable of taking entire charge of our Albany works; must have thorough and practical knowledge of stove plate manufacture in all branches; state experience, reference, age, &c. Rathbone, Sard & Co., Albany, N. Y. Dec. 21

FOREMAN for cornice, skylight, galvanized tank and windmill works; give references, age, experience and salary expected. Address Box 192, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

Good SALESMAN for Connecticut, Western Massachusetts, Vermont and New Hampshire trade in steam, hot water and furnaces; must locate in center of territory. Address, with particulars, "L. M.," care *The Metal Worker*, New York. Dec. 21

FOREMAN for steam, hot water and fan heating work; must possess clerical and practical experience and knowledge. Box 194, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

First-class TINNERS, thorough workmen, for inside and outside work. J. E. Kuchler, 325 West Forsyth street, Jacksonville, Fla. Dec. 21

Experienced STOVE SALESMAN for Northern Illinois; send references. Apply by letter. Bergstrom Bros. & Co., Neenah, Wis. Dec. 21

FOREMAN; a thoroughly competent man who understands high and low pressure steam; one who has had experience in handling men and can bring best of references. Smith & Anthony Company, Boston, Mass. Dec. 21

Young man with experience in bookkeeping and drafting plans for heating work; practical knowledge desirable. Box 193, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

TIN and SHEET IRON WORKER; an all round hustler; must speak German, be sober and reliable; steady job to the right man. H. F. Prenzlowl, Johnson Creek, Wis. Dec. 21

Two SALESMEN, one for Michigan and one for Southern Indiana; in your application state your age, references, amount of business you wrote in 1900 and 1901, and salary asked. Enterprise Stove Company, Vincennes, Ind. Dec. 21

A good, competent WORKING FOREMAN to take charge of cornice, skylight and general jobbing shop; must be steady man and quick; one who is able to do his own drafting and estimate from plans; steady job; wages \$3.50 per day; none but competent men need apply. James Booker, 226 Seneca street, Oil City, Pa. Dec. 21

FOREMAN in general sheet metal work shop; must be able to draft, cut patterns and estimate on work, also familiar with skylight work; state age, experience and salary wanted; none but good men need apply. P. O. Box 376, New Orleans, La. Dec. 21

Experienced SALESMAN for our steam and water heaters in Philadelphia and vicinity. The Prize-Painter Stove Heater Company, Reading, Pa. Dec. 14

SITUATIONS WANTED.

Hot air furnace plants, steam or hot water heating construction work; SALESMAN and ESTIMATOR, New York City experience, practical mechanic, desires to change his position; A1 references. F. Goss, H., 160 Bleecker street, New York City. Dec. 28

A man with 20 years' road experience, commanding a first-class New England trade in the kitchen furnishing and department store line, would like to make a deal with some good manufacturing company to represent them in New England for 1902; can furnish references from A1 Boston, New York and Chicago houses. G. H. Meserve, 76 Pearl street, Boston, Mass. Dec. 28

As TINNER and GENERAL JOBBER, either for inside or outside work; also understand the hardware, stove and crockery business; reliable and sober and can furnish first-class reference; prefer Long Island, Connecticut or New Jersey. Box 46, Prattsville, N. Y. Dec. 28

By a good CORNICE CUTTER. Jack Bailey, 238 West Thirty-sixth street, New York. Dec. 28

Young man, 26, temperate, ten years at tin and sheet iron trade, including blast pipe and furnace work; can cut patterns for elbows, T and Y joints, &c., make and read blue prints; desires steady position; am at present employed. Box 86, Berwick, Pa. Dec. 28

By a first-class PLUMBER, GAS, STEAM and HOT WATER FITTER, as manager of a first-class shop; thoroughly competent to estimate, lay out the work, up to date, new work or repairs; can handle shop of 50 or more men; steady, 20 years' experience. "Station," 123 West Forty-sixth street, New York. Dec. 28

First-class HEATING ENGINEER wants a position with a good firm; thoroughly up to date on house heating, various systems; can handle machines, estimate jobs and superintend to completion; 22 years' experience; steady. El. Boy, care *The Metal Worker*, New York. Dec. 28

A1 FURNACEMAN and GENERAL JOBBER desires steady position; can give best of references; can estimate and lay out all classes of tin and sheet metal work; have had experience in hardware store as salesman. W. F. Brien, 42 River street, Hoosick Falls, N. Y. Dec. 28

A young man, 20 years of age, with four years of outside tinsmith experience, would like to get a job where he could learn some inside work; will work for \$9 per week. Arthur Le Strange, 308 East Forty-ninth street, New York. Dec. 28

By a good, all round PLUMBER and TINSMITH. Andrew Hermance, Pittsfield, Mass. Dec. 28

As FOREMAN of plumbing and tinsmithing shop; understand heating, hot air, steam and hot water; can estimate, lay out work and handle men to advantage; best of references. "E. M.," care *The Metal Worker*, New York. Dec. 28

PLUMBER open for engagement January 2, 1902; wages moderate. "B. L.," care *The Metal Worker*, New York.

By a first-class TIN and SHEET IRON WORKER, CORNICE and SKYLIGHT MAKER; can furnish best of references; New York and vicinity preferred. A. Schultz, 204 East Nineteenth street, New York. Dec. 28

As TINSMITH, by a young man with eight years' experience on range, furnace and roofing work; will work for low wages if steady; can furnish good reference. "C. F. P.," 327 Melrose street, Brooklyn, N. Y. Dec. 28

Would like to correspond with some good firm in Colorado or California that is in need of a good TINNER; can do tin, slate and furnace work, also pump work; will come on trial or give all the reference that any one wishes; 15 years' experience, 35 years old; cause of change, wife's health. J. A. Willson, Box 39, Harrodsburg, Ky. Dec. 28

As TRAVELING SALESMAN or OFFICE MAN, age 35, 12 years' experience in charge branch store and in traveling in metal line; experienced correspondent and good selling ability. "F. A. L.," care *The Metal Worker*, New York. Dec. 21

A first-class PLUMBER, sober, reliable and willing, desires position in city or country; some knowledge of hot water heating and steam; Minnesota, Wisconsin, Dakota, Iowa or the West preferred; state wages. Address Box 191, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

By first-class PLUMBER and STEAM FITTER; understands general work in country shop. P. O. Box 107, Babylon, L. I., N. Y. Dec. 21

Young man, temperate and reliable, desires to locate in Southern shop; five years' experience at plumbing, gas fitting and work coming into general jobbing shop; also some knowledge of tin roofing, guttering and range work; correspondence solicited. "Plumber," care W. J. Fleming, Yorklyn, Newcastle County, Del. Dec. 21

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Young man with knowledge of chemistry desires position to learn the metal business; good references. Box 188, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Dec. 21

ESTIMATOR, MANAGER or SUPERINTENDENT of good cornice, roofing and sheet iron working shop would like change January 1, or would take agency for something of merit. "Estimator," care *The Metal Worker*, New York. Dec. 21

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SALESMAN; ten years' experience in the stove and heating business; also has had some experience in steam and hot air heating lines; fully acquainted with the trade in Greater New York; has traveled in New Jersey and Connecticut; wants engagement from January 1, 1902, yearly contract. "Ranves," care *The Metal Worker*, New York. Dec. 21

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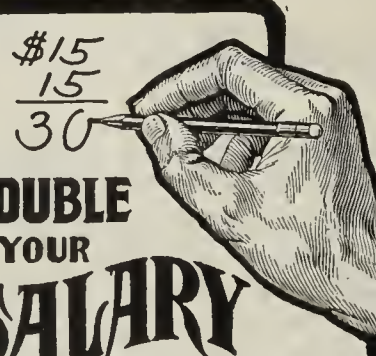
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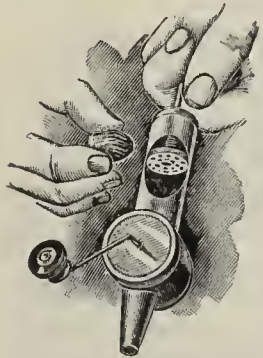


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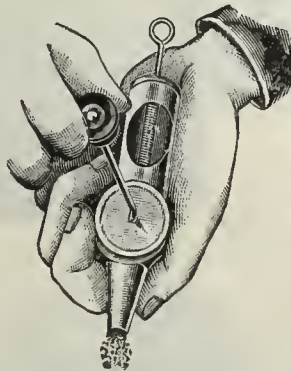
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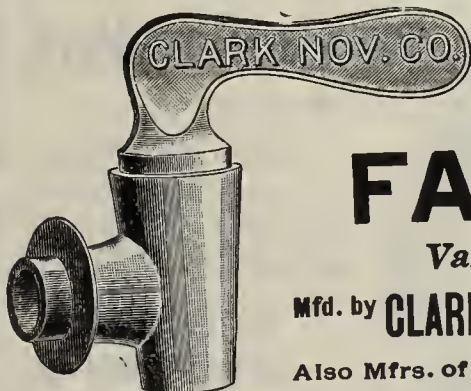
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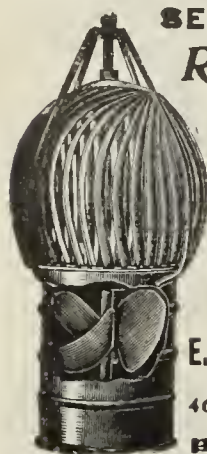
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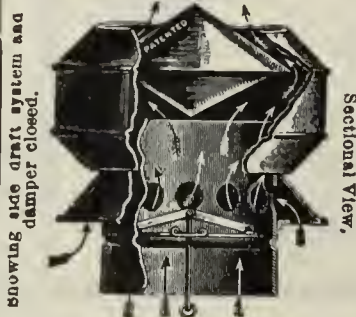
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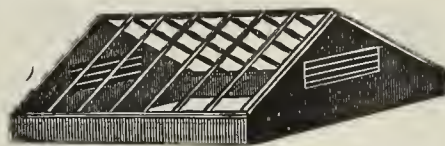


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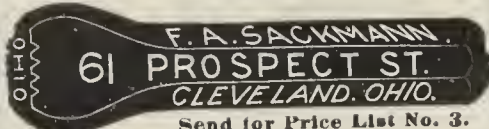


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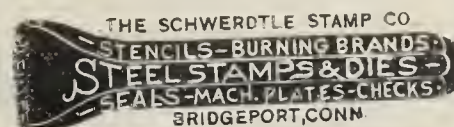
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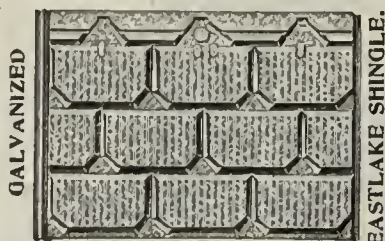


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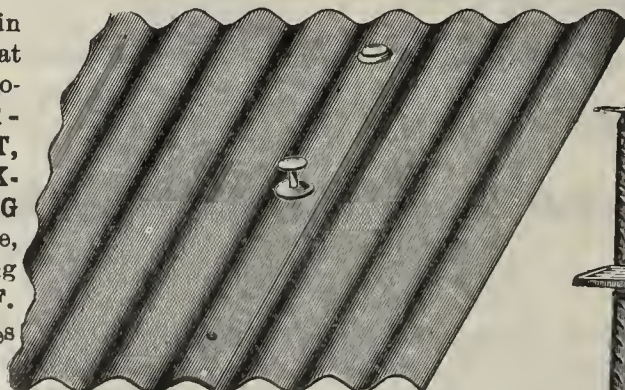
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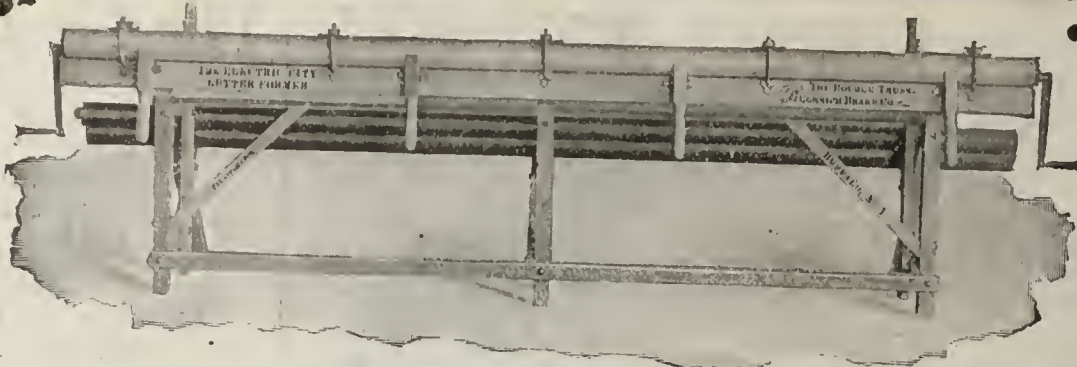
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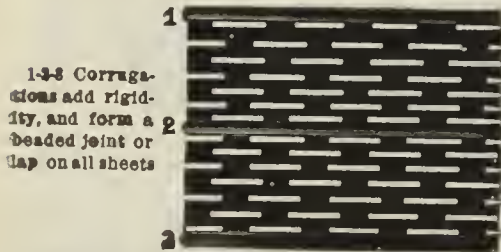
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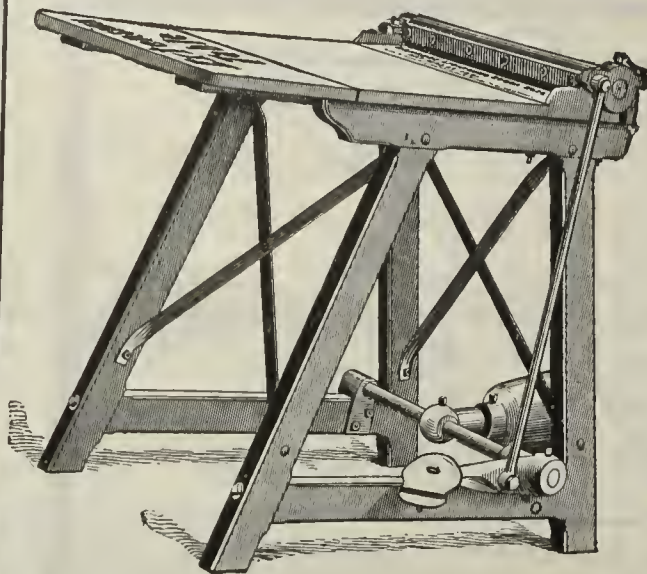
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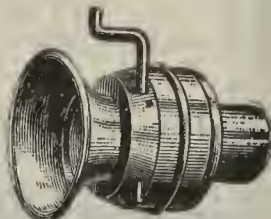
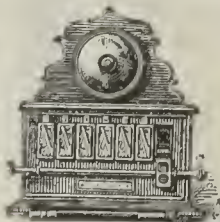
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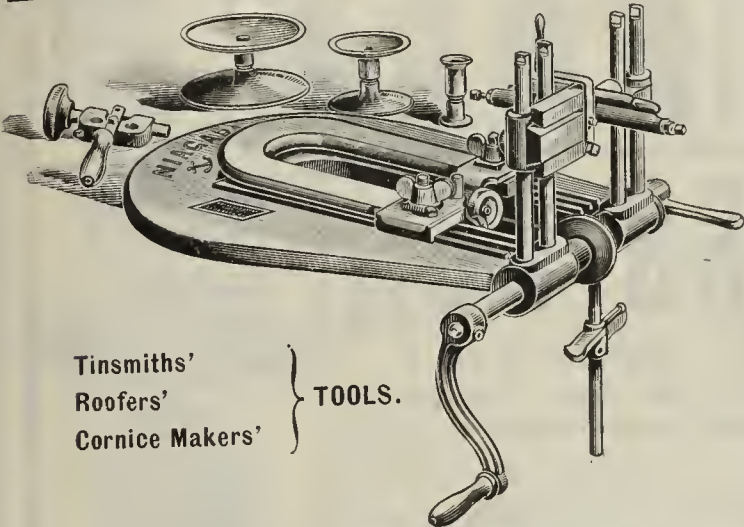
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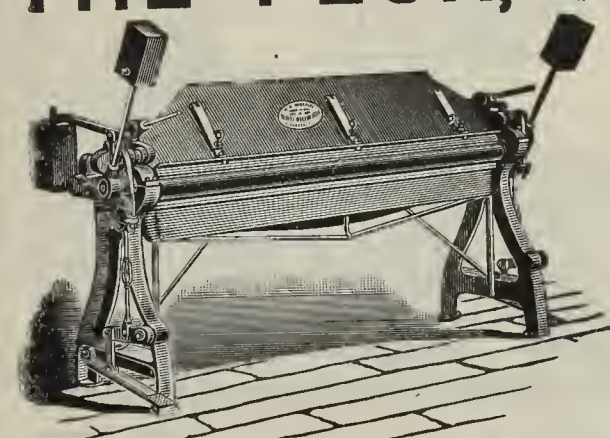
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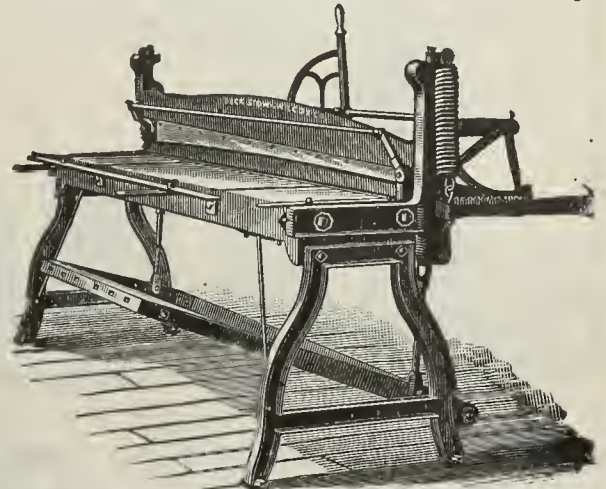


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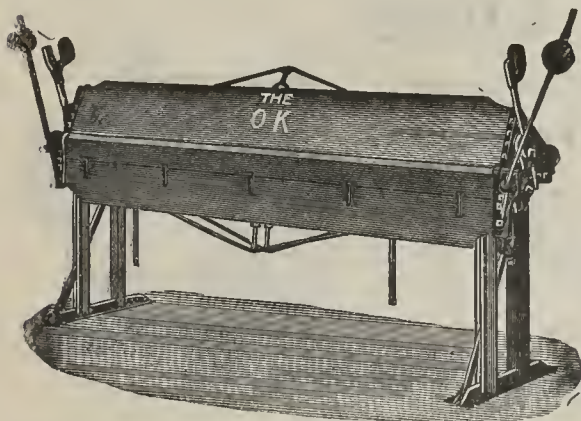
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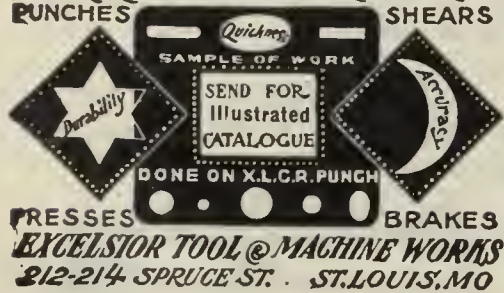
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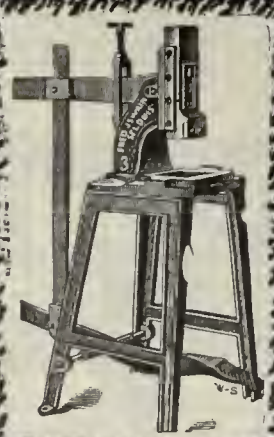
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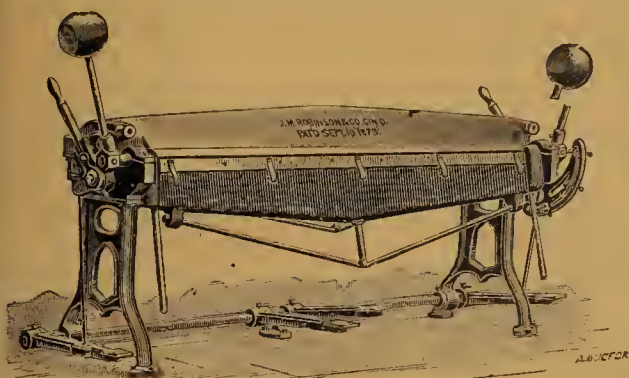
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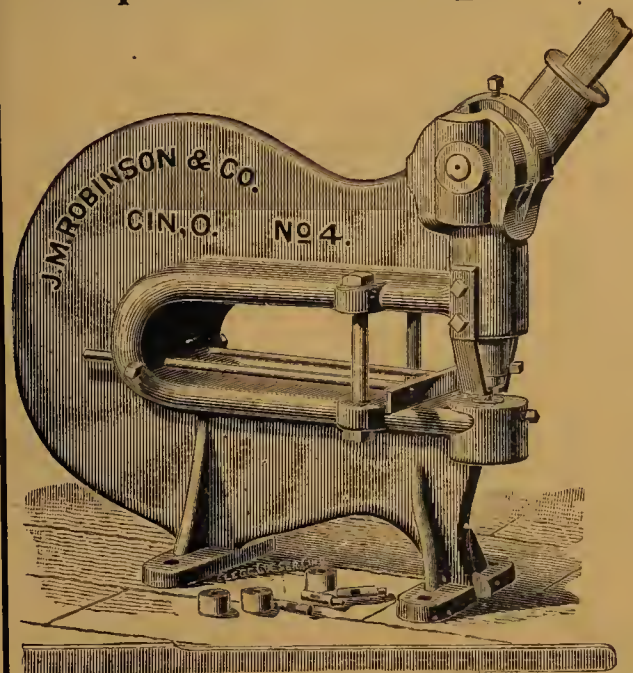


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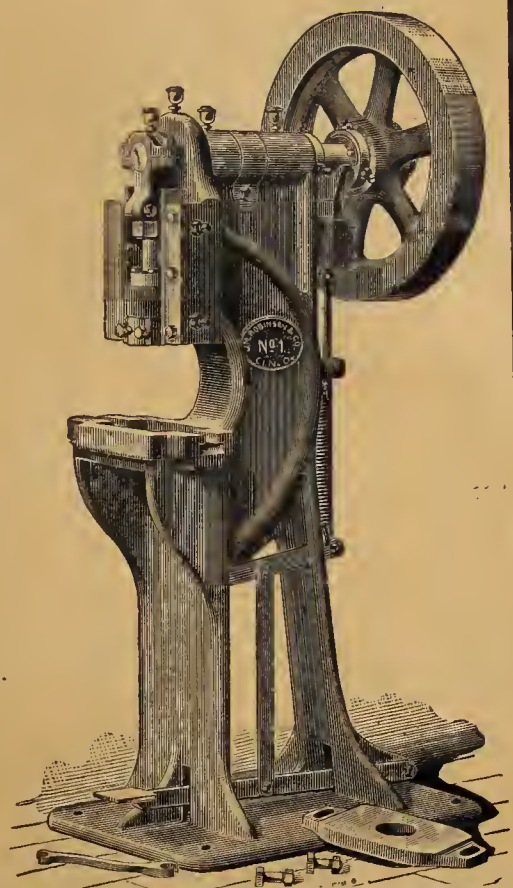
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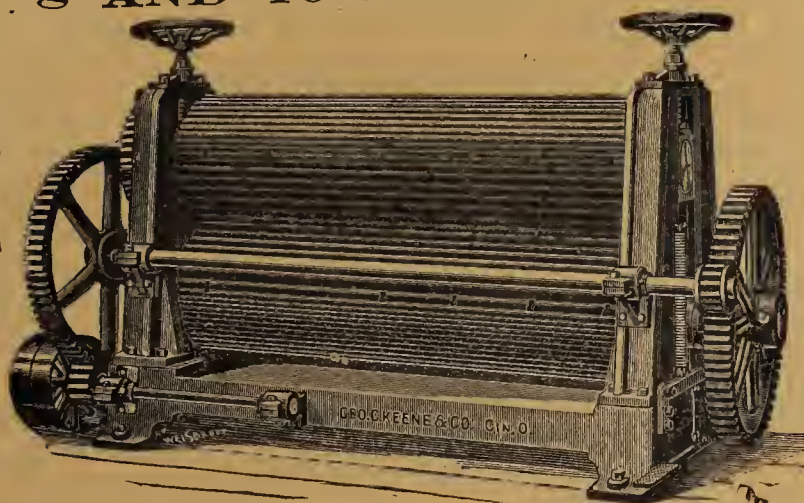
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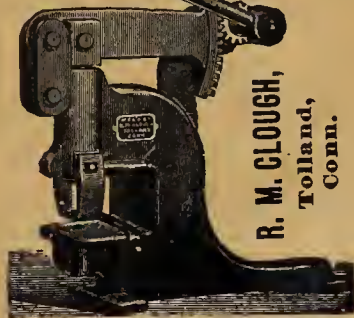
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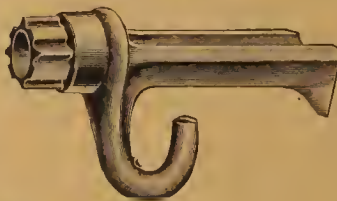
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